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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Trade Restoration

"THE essential thing for British trade, whether home or export, is that we should produce the right goods at the right price, and support production by thoroughly efficient and up-to-date business organisation and methods." In these words Mr. Max Muspratt, in an interview we are glad to publish in this Merchant Shippers number, sums up the essential conditions of success, whether in home or in export markets. The advice is sound as well as appropriate to the present situation. Speaking with an authority not to be excelled for the heavy chemical industry, he is able to point to the exceptionally sound position we hold in comparison with the strongest rivals in the world. His testimony is a sufficient answer to the cheap tag so often repeated that we are not a nation of producers so much as a nation of distributors. The truth is that we are both, and can do equally well in both branches when we care to take the necessary trouble. People

are so much engaged in wondering at the great commercial combines of Germany that they often neglect to notice the fact that we have in this country several great chemical corporations which are as successful as any to be found abroad. Their success, any more than the German success, has nothing miraculous about it. It is due simply to the form of genius which is a capacity for taking pains. In other words, the great positions held by these British concerns are due to the far-sighted views of the original founders, to their appreciation of the great value of the raw materials lying ready at hand, and to their combination of scientific research, technological efficiency, and good commercial management. In different words, therefore, we come back to Mr. Muspratt's definition of the essential conditions of success, and it is well to be reminded that British chemists and business men understand them as well as their rivals of other nations.

There is really no justification for the self-depreciation in which the British people so often indulge. It is one of our characteristics, as was illustrated again and again during the war, to magnify defects in our work and to take the great results almost for granted. Yet the truth is that in varying degrees our commercial capacity and influence are the admiration as well as sometimes the envy of every nation under the sun. We have missed opportunities, it is true, as in the case of coal tar dyestuffs; there are points, especially in marketing and advertisement, in which we can learn from others. The fact remains, however, that in the really great things we have achieved impressive successes, and that where improvement is still needed is mainly in small matters of detail, and in collective action. The strong individualism of the British character is one of its best points; yet in some connexions it has been over-developed to the point of making co-operative action very difficult, if not impossible. A steady improvement is in process here. Experiences are now pooled to an extent unheard of a quarter of a century ago, and producers and merchants are both learning that there is much of common advantage to be got from closer commercial intercourse. Nor is it limited to these classes. Railways, shipping services, postal facilities, and other remoter agencies are coming to be regarded no longer as competing interests one against another but as parts to be co-ordinated in the great machinery of national commerce. And behind all this the Government is being made to feel that its duty is not to squeeze the utmost farthing that can be extorted from industry but to help the development of national and Empire trade so that it may be able to meet reasonable demands without peril of being extinguished.

In this issue we publish the opinions of a number of eminent figures in British industry on the conditions likely to aid the restoration of our export trade. There

are two conditions constantly insisted on. The first is peace—peaceful intercourse once more between the nations of the world for the common good of all, and peace internally between Capital and Labour. Even at its best strife in either sphere is a dissipation of energy in non-constructive activity; at its worst it is positively destructive and merely adds to the heavy burdens the world must carry in any case for some years. The second condition is confidence. This follows naturally on the first. When stability has really been restored, trade will proceed with its old confidence, and that "nervy" hand-to-mouth attitude, produced by fear of entering into any commitments beyond immediate and visible limits, will cease to hold up business. Fortunately, there are signs that both conditions are slowly but surely returning. And with their return the restoration of our trade is certain.

Closing the Profession

MORE than once, of late, reference has been made to the desire in many quarters to make chemistry a close profession like Law and Medicine. Every lawyer and doctor, before he can practise professionally, must have passed the prescribed examinations and complied with other regulations. Even after admission he may not advertise, beyond the exhibition of a name-plate on his chambers, surgery, or residence. Chemistry is, of course, as much a profession as either of the others named, and its practice calls for as high a standard of qualification. Yet it lacks the legal status and the corporate discipline. Equality in these respects with the legal and medical professions can hardly be hoped for until the term "chemist" is legally recognised and defined. In the meantime, however, efforts are being made to establish a professional standard, and to ensure by general assent and custom what there is at present no power to enforce. The Institute of Chemistry, for example, forbids advertising as chemists on the part of its Associates and Fellows. The Chemical Society, if it does not actually forbid it, deprecates the practice. We are not sure that the Society of Chemical Industry has any rule on the point, but its sympathies, one may be sure, would be in the same direction. The British Association of Chemists and the Association of Industrial Chemists—both registered as trade unions—have, so far as we know, no official policy on the subject. Beyond the membership of these bodies, there is a large number of works or private chemists, in many cases highly qualified by experience if not by diploma, outside the bounds of all disciplinary influence.

In such circumstances what should be the attitude of public journals to those chemists who desire to advertise their qualifications as consultants in their columns? The point is not purely academical; the question, in fact, has been definitely put before us in one or two cases. Our readers will need no assurance of a desire to co-operate with the recognised chemical organisations in raising in any way possible the status of chemistry as a profession; but it is important to proceed on safe and logical grounds, otherwise harm rather than good may result. First of all, it seems clear that the standard of discipline must be set from within. If the profession of chemistry were completely controlled by bodies such as the Law Society or the

Medical Council, everyone entitled to practise chemistry would be subject to central discipline. No such inclusive body exists, and discipline therefore can only be exercised piecemeal. The Institute, the Chemical Society, the Society of Chemical Industry, and the other associations of chemists may agree among themselves upon a professional code and resolve to enforce it on their members. They have not yet taken this combined step, which would carry the present limits of professional discipline a long way forward, and until they do so it is difficult to see how independent journals, however sympathetic they may be, are to impose on unattached chemists a condition not uniformly imposed even on the attached. In the United States, consulting chemists and engineers holding University degrees regularly advertise in chemical journals. At least two other British journals than our own admit similar advertisements—in some instances with names, in others without. In either case the principle is the same. Would such journals fairly be entitled to impose upon the few chemists who may wish to advertise, in opposition to the general practice of their colleagues, a rule which some of the organised associations do not impose on their own members? Would they be justified, even if the societies were unanimous in their action, in depriving the unattached chemist of the right, which the law allows him and of which no existing society can deprive him, of describing himself as a chemist and advertising his qualifications? It is a nice point, and we should like to have some opinions on it.

The "Packed Cell" Process

In the latest issue of our American contemporary, *Chemical and Metallurgical Engineering*, there appears an article on one of the newer methods of manufacturing sulphuric acid which contains many points of exceptional interest to acid makers in this country. The article deals with the "packed cell" plant which was introduced in 1917, and the development of which since that date has been considerable. Chemically the process is identical with the ordinary chamber methods; but by a modification of physical and mechanical conditions a remarkable acceleration of the acid-producing reactions has been effected. The old leisurely chamber method has stood us in good stead for many years, but the exceptionally large volume of chamber space required per lb. of sulphur burnt per day has prompted chemical engineers to devise means for hastening up the process. Many instances can, of course, be pointed to in this country where the necessary chamber space has been measurably curtailed by modification in construction, and the American results with the "packed cell" process should at least provide interesting material for the purpose of making comparisons. It now seems fairly well established that with the "packed cell" method the cost of plant for a given tonnage is little more than half the cost of a chamber plant of equivalent capacity; the cost of operation is less (and this, perhaps, is the salient point, for with some of the recent modifications it has been said that operating and supervision costs are a serious item); while so far as ground area is concerned there is a very considerable saving.

In the "packed cell" process vigorous mixing of the gases is aimed at, and at the same time a large amount of wet surface for cooling, impingement, and condensation is provided. The plant consists essentially of a source of sulphur dioxide, a Glover tower, packed cells, Gay-Lussac towers, acid coolers, pumps and fans. A fan forces the gases into the Glover tower, and thence they pass through flues to the packed cells. Generally, there are five of these cells, sheathed with lead and packed with acid-resisting bricks of standard shape, the gas flowing up and down them alternately. From the cells the acid flows to the coolers, the cooled acid being distributed down the cells. The Gay-Lussac tower is utilized in the ordinary manner. Some interesting data regarding reaction speed in towers when using different acid concentrations are referred to in the article, while it is noted that the nitre consumption was eventually reduced to about 4.5 per cent. on the sulphur in the acid produced.

Open-eyed America

BRITISH chemists and technologists may be interested to hear of the keenness with which their work is followed in the United States. Rarely do we publish any contribution bearing on original work in this country, or any notes on new processes or patents, without receiving inquiries from the technical departments of United States firms, or being asked to put the inquirers into touch with the authors. It is gratifying to have provided through THE CHEMICAL AGE a means formerly non-existent of making British original work known outside as well as within the United Kingdom. It is also perhaps something of a reproach that the work of British chemists should be receiving more systematic attention from rival nations than it sometimes appears to receive at home. Not only is the United States eager to inform itself of the latest developments over here, but it is scarcely less eager to inform us of what its own investigators are doing. The official publications on the most recent researches issued by the various Government bureaux are of the greatest scientific and technological interest, as the numerous inquiries we have passed on from British readers show. In addition, the American Chemical Society, instead of hiding American talent away in its own official napkin, spreads it broadcast for the public good. Here, too often, the official policy seems to alternate between the restriction of information of wide scientific value to stodgy publications which the faithful occasionally read as a religious penance, and the belated liberation of fly-blown "news" which no live journal would look at.

Tar Distillation and Cracking

PARTICULARS have been furnished us of a new continuous process for the distillation and cracking of coal tar, from which good results are expected by those responsible for it. Perfected and tried during a complete week of continuous working, the process has further been subjected to a large scale test at the Glasgow Corporation chemical works, under the direction of Mr. Walmsley and the inventor, Mr. Thomas Wilton, of the Chemical Engineering and Wilton's Patent Furnace Co., Ltd. It is stated that in the

distillation of a large quantity of tar the process gave an average residue of only 27 per cent. of pitch where normally about 44 per cent. would be expected. Particulars and figures relating to the process will be communicated by Mr. Walmsley to the annual meeting of the Society of Chemical Industry, in Glasgow, on July 5. In the meantime, Mr. Wilton explains that the process, which is fully protected in this country and abroad, has been primarily designed for coal tar and petroleum oil cracking and distillation, and that the new plant which will shortly be put in operation will be constructed to treat oil of this nature. The plant at Glasgow is capable of dealing with 50 tons per day of 24 hours, and with 10 per cent. of water is said to have shown very remarkable results.

Points from our News Pages

Mr. Max Muspratt, in an interview in our "Leaders of Chemical Industry" series, discusses the position of the British heavy chemical industry. He favours the repeal of the Safeguarding Act but recognises the need of the Dyestuffs Act (p. 684).

Special messages to THE CHEMICAL AGE on the conditions required for the restoration of British export trade are published from Sir Robert Hadfield, Sir Edwin Stockton, Sir Frederick Mills, Sir Charles Macara, and Mr. George Terrell, M.P. (p. 687).

A collection of practical notes on the chemical markets of the world is the first instalment of a series of articles on the subject (p. 691).

The arrangements for the Brazilian Centenary Exhibition at Rio de Janeiro, to be held from September 7 to December 31, are described and the advantages offered to exporting firms explained (p. 695).

In his decision, dated May 17, in the synthetic camphor case, the Referee directs that pinene and synthetic camphor be removed from the Board of Trade's list of dutiable articles, and that the words "Komppa's synthetic camphor" be added (p. 696).

Our London Market Report states that the improvement in business continues and that the market feeling is cheerful (p. 707).

Our Scottish Market Report describes business during the past week as fairly satisfactory, with values of spot deliveries well maintained (p. 709).

Books Received

A TEXTBOOK OF ORGANIC CHEMISTRY. By J. S. Chamberlain. London. George Routledge & Sons. Pp. 960. 16s.

METALLOGRAPHY. By C. H. Desch. Third Edition. London. Longmans, Green & Co. Pp. 440. 16s.

The Calendar

May 29	Society of Chemical Industry, London Section: "The Structure of Coke." Sir George Beilby. 8 p.m.	Institution of Mechanical Engineers, Storey's Gate, London.
31	Scientific Instruments Inquiry resumed.	London.
June 1	Chemical Society: Ordinary Scientific Meeting. 8 p.m.	Burlington House, Piccadilly, London.
7	Society of Public Analysts: Ordinary Meeting. 8 p.m.	Burlington House, Piccadilly, London.
8	Incandescent Gas Mantles Inquiry opens.	London.
	Chemical Society: Lecture by Dr. H. H. Dale. 8 p.m.	Burlington House, Piccadilly, London.
15	Foundry Trades' Exhibition.	Birmingham.

Leaders of Chemical Industry

V.—Mr. Max Muspratt

PERHAPS the shortest and most complete characterisation of Mr. Max Muspratt would be to say that he faithfully embodies the traditions of a great Liverpool family long and honourably associated with the industry, education, politics, and public work of the city. Like his father, Dr. E. K. Muspratt, who founded the Financial Reform Association, served as President of the Society of Chemical Industry in 1885, and held many offices connected with the Liverpool Chamber of Commerce, the University of Liverpool, and the City and County Councils, Mr. Max Muspratt combines a capacity for both the technical and the commercial sides of industry with a generous interest in public life. Born in 1872, he completed his education at Zurich, where he was the first Englishman to take the Swiss Government diploma in industrial chemistry. In 1895 he entered the works of the United Alkali Co., Ltd., in which the firms of James Muspratt & Sons and Muspratt Brothers & Huntley had been already incorporated, becoming later a director with special charge of the technical operations, and ultimately succeeding the original chairman, Mr. John Brock, as chairman. During the war Mr. Muspratt took charge, under the Ministry of Munitions, of the manufacture and distribution of sulphuric acid, and also rendered other valuable service to the Ministry of Munitions and the Board of Agriculture. In addition to serving on the boards of other industrial concerns, he is Vice-Chairman of the Association of British Chemical Manufacturers and of the National Sulphuric Acid Association, and is a Vice-President of the Federation of British Industries. Still young, equally in years and spirits, one may safely prophesy that these are but a few of the offices he will be called upon to fill.

With so fine a family record of public service, no true Muspratt could be indifferent to the call from this quarter, and Mr. Max Muspratt has responded to it well. He first entered public life as a member of the Liverpool City Council twenty years ago, and is now leader of the Liberal party on that body. He has been closely associated with the organisation and work of the Liberal forces for Liverpool and Widnes, and in 1910 successfully contested the Exchange Division of Liverpool. He subsequently fought the Exchange and the Bootle Divisions unsuccessfully, and later was adopted Liberal candidate for the South Wolverhampton Division, but refused to oppose General Hickman in 1919 because he was a firm supporter of the Coalition Government. During the year 1916-17 he discharged the onerous duties of the Lord Mayoralty of Liverpool, organised a campaign in support of the various War Loans with conspicuous success, and welcomed the first American troops under General Pershing when they landed.

Mr. Muspratt—again following a family tradition—has always evinced a keen interest in educational movements. He was for some time chairman of the School of Russian Studies in Liverpool, and has been a member of the Council of the University. As leader of the Liberal Party in Liverpool, his aim has been throughout to keep the party together; but, following the rupture at Leamington, Mr. Muspratt took steps to form a live Liberal organisation, under the name of the Merseyside Council of Centre Liberals, to secure adequate expression for Liberal principles and to see that Liberal supporters of the Coalition exert a real influence in national affairs.

"Mr. Muspratt," writes one who knows him well, "conveys the impression of a forceful personality. He is not one of the strong, silent men beloved of novelists who attempt to portray our captains of industry. On the contrary, without fighting for fighting's sake, he welcomes opposition with both hands, and meets it more than half-way with sledgehammer blows. In industrial debates he usually presents a new point of view, and his contributions to the discussion are marked with an originality of thought which is always refreshing. In the political world in Lancashire he is a power to be reckoned with, and it is said that political head-quarters in London seldom make a move which concerns Lancashire without listening to what he may have to say on the matter."

British Heavy Chemical Industry

It is, however, with his connexion with British chemical industry, and especially with heavy chemicals, that we

are now concerned, and some opinions which Mr. Muspratt was good enough to offer in the course of conversation will be read with interest.

"The British heavy chemical industry," he said, "is undoubtedly in a very strong position at the present day. In alkali it is absolutely supreme. In ammonium products and tar distillation primary products it is very strong. In sulphuric acid it has been going through a very trying time, but for the ordinary strengths there is every reason to believe that the technique is not inferior to that of any other country. As far as oleum is concerned, with the exception of perhaps one firm, we have not yet got fully into our stride, but as a result of the war there are many first-class plants in existence. There is, however, barely sufficient demand to keep them in full work, and full work is the first essential of a successful Contact plant. In bleaching powder we are probably the best equipped nation in the world, and with fuel prices going down, the advantages of cheap water-power which other countries possess are entirely offset by the better geographical



MR. MAX MUSPRATT

position of this country with regard to both raw materials and facilities for export."

Asked for his explanation of the relative difference in the positions of the heavy and fine chemical industries, Mr. Muspratt replied: "Our two sources of strength in heavy chemicals are geographical position and generations of experience. In no country are there such natural supplies of coal, salt, and limestone to be found in such close proximity as in the leading chemical centres in England. In heavy chemicals this country has always been the pioneer; and the old Leblanc process, which is only just dead, was a magnificent training-ground for inorganic chemistry. In the dyestuffs industry we have had no such special advantage, and the constantly extending requirements for heavy chemicals have led our chemical manufacturers to spread themselves over the world markets in heavy chemicals rather than to take up dyestuffs and fine chemicals. A few individuals had followed up these lines, but the scale was never large enough to cover the ground sufficiently to compete with the Germans. It is not that we have lost ground in fine chemicals and dyestuffs. Until the recent war developments we had never more than played with them. We had looked after the ton, and allowed the pound avoirdupois to look after itself."

The Need for Co-operation

"In the heavy chemical industry," Mr. Muspratt continued, "the prospects for the future are excellent, but fine chemicals and dyestuffs have still a long way to go before they can be considered an absolute success. I am strongly of opinion that the only way in which these branches can be made successful is by determined co-operation and the exchange of ideas between all members of the chemical industry. Fine chemicals and dyestuffs are at the end of the series of processes of which heavy chemicals, tar products, and intermediates are the vital, if preliminary, members. At the present time it is attempted to develop the end products in watertight compartments without any attempt to have the earlier elements co-ordinated with a view to rallying support to fine chemicals and dyestuffs. The manufacturers of heavy chemicals and intermediates are only too anxious to help; but at the moment there is no such thing as a dyestuffs policy. Each maker is a law unto himself, and overlapping prevents many of the fundamental intermediates from being made on the mass scale. This matter is being very thoroughly discussed, and I cannot but believe that in the end common-sense will triumph. At the moment, however, the signs are not too promising."

The Safeguarding Acts

"I am quite satisfied," Mr. Muspratt added, "that the Dyestuffs Act was necessary in the interests of the country, though as a Liberal and Free Trader I dislike anything in the way of legislative interference with industry. The position, however, in which we were before the war, based upon a century of peace, made some such action inevitable, and prohibition, modified by licence, is, in my view, the frankest way of dealing with the situation. The Safeguarding of Industries Act was a well-meaning attempt to deal with isolated cases of national necessities which, for economic reasons, were not at the moment properly provided for; but it has been rendered almost entirely futile by the extraordinary slump in the German exchange. Assuming that in the case of a given product we can manufacture as cheaply as Germany, as the result of the exchange Germany can still sell down to about one-third of our cost with quite a handsome profit. No Safeguarding Act could have made provision for such abnormal conditions, and the Act has been therefore of little value, and might be repealed without any great hardship to

anyone. Whether it should be replaced by something on the same principle as the Dyestuffs Act, but applying to a very greatly restricted list of articles, might be a matter for theoretical consideration; but I am afraid that public opinion would scarcely entertain a second attempt to deal with the problem, the first having failed."

Export Trade

Touching, in conclusion, on export trade, Mr. Muspratt remarked: "Our own exports of alkali products are greater than ever before in the history of the country. The old American market for bleaching powder has gone entirely, but it had been an unprofitable one for years before the war. The great consumers of chlorine products are the home paper and textile industries, which are distinctly slack; and as soon as they recover, other industries which supply them should recover too."

"As regards the general restoration of trade, I am not greatly impressed with the value of artificial methods of putting everything right at once. The essential thing for British trade, whether home or export, is that we should produce the right goods at the right price, and support production by thoroughly efficient and up-to-date business organisation and methods."

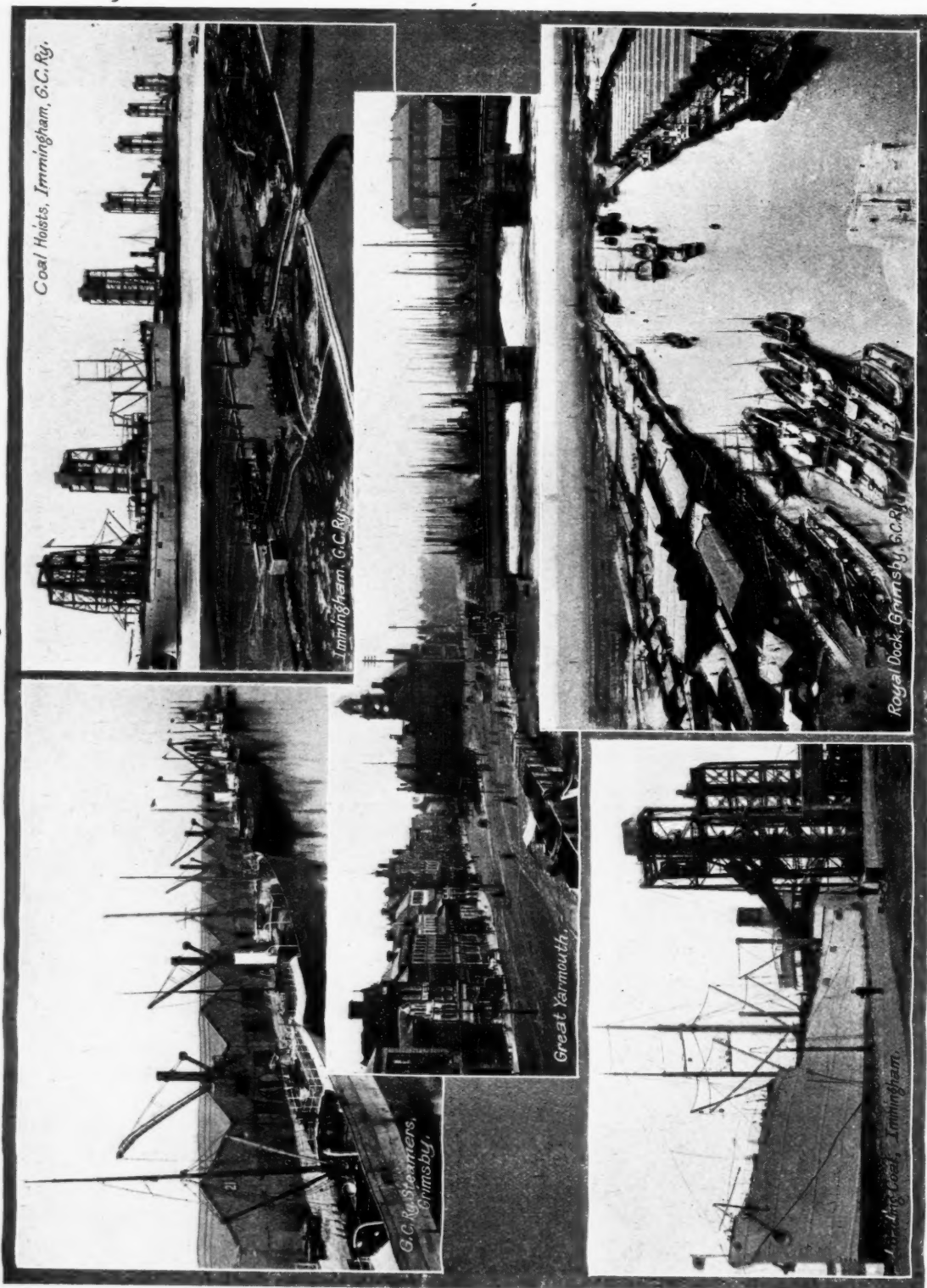
THE CHEMICAL EXAMINATION OF WATER, SEWAGE, FOODS AND OTHER SUBSTANCES. By J. E. PURVIS, M.A., and T. R. HODGSON, M.A. Second and enlarged edition. Cambridge Public Health Series. The Cambridge University Press. 1922. Pp. 344. 20s.

It can be said at once that this volume is an excellent one and achieves successfully the purpose for which it has been produced—namely, the assistance in the laboratory primarily of public health students. The choice of subjects has been well made; the clearness of the description of the analytical methods and the mode of presentation of detail make the book a very agreeable one to use. The appearance of this second edition suggests that a third is not unlikely, and when this further stage is reached opportunity will be given for a few improvements in detail, if the authors agree with us.

It is a pity that, in a book of instruction such as this is, specific gravities are given compared with 1,000.0 as unity instead of 1.000. Students and others who have progressed so far as to make use of this book know better, of course; but in any case this mode of expression is a blemish as being unusual and unnatural and, more particularly, undesirable as originating in the pandering to the ignorance of those who are scared of a decimal point. Recognition should be given to Hehner and Mitchell for their heat of bromination test of fats as a convenient substitute for the more troublesome iodine number. The dimethyl glyoxime test for nickel in the extract or ash of hydrogenised fats might be included with the sulphide test.

The numerous tables of typical analyses are a good but an expected feature; we should like to see these even more consistently included, together with some indication of the amount of variation of the figures usually met with. More important is the development of a valuable section which has been partially carried out in the chapter on "Water." Facts are useless unless interpreted, and the interpretation of results of analysis in this branch of chemistry frequently presents considerable difficulties. The authors recognise this (p. 28), but how much more is help of this kind necessary in disentangling the results of examination of a mixture of oils and of fats? There is, however, the obvious risk of the assumption by the student of a spurious confidence when he finds he can immediately interpret his results from a book instead of from experience; but we think, on the whole, that the advantage is in favour of inclusion of some such help.

P. E. S.



The Restoration of British Export Trade

Views of Representative Commercial Leaders

Below are published special messages contributed to "The Chemical Age" by a number of representative leaders of British industry on the measures and conditions best calculated in their judgment to restore and develop British export trade.

Sir Robert Hadfield, Bart.

My own feeling is that if we can only get Capital and Labour to pull together, there is a bright outlook for British industry—this, too, in the not very far distant future. On the other hand, if we are going to continue mutually to waste our energies in stoppages, lock-outs, and strikes, well, it is hard to say what may not happen. After all, a disgruntled and out-of-work people cannot be happy; such a situation only leads to further trouble and mental disturbance.

I have recently been on the Continent, and found our French *confrères*, whether on the Capital or the Labour side, pulling much more together. Consequently there is but little talk about quarrels between each side and, as far as I could ascertain, not much unemployment. Both sides seem to be working together for the best interests of the State. I only trust that this example will be followed over here.

It is the restoration of mutual confidence which is most required. Buyers in our own country, our dominions and possessions, are hardly likely to come forward in large numbers—this applies also to the Continent and the Far East—if they think Capital and Labour prefer to be constantly engaged, as has been the case for the last three years, in internecine struggles rather than in production, the serious cost of which the buyers and consumers are in the end asked to pay.

This country has a great future before it if we will only settle down to real hard work. In my opinion our climate and environment are adapted to enable a higher production and distribution of manufactured goods than any other country in the world. Therefore let us be sensible and make use of the opportunity which the Gods have presented to us.

R. A. HADFIELD.

Sir Edwin F. Stockton

(Past President of the Manchester Chamber of Commerce)

I do not think that anyone can now doubt that the trade position is showing a gradual improvement and that we have certainly turned the corner. The progress may be slow—that is only to be expected—but it is sure, and it is being steadily maintained. When the severe slump came, it was upon us like a thief in the night and very few people, if any, contemplated such a sudden and severe change in conditions in almost every branch of industry. The inevitable result has been worry and anxiety and difficulties of all sorts for traders, coupled with a grave condition of unemployment. This latter, in my view, has been the most crushing danger we have had to face, for it is a cruel fate for any willing workers to be faced with the spectre of being unable to find the opportunity of working to maintain those dependent upon them. Fortunately the tide has turned, and the prospects all round are brighter. The feeling of exaggerated depression which has done so much harm is gradually being broken down, and people are beginning to discern the silver lining, which in my opinion has all the time been there, only so few have had the fortitude to look for it.

I believe we can help forward the trade revival by adopting a more enterprising policy. The need to encourage a restoration of confidence and a little extra risk here and

there would be of material assistance towards getting the wheels of commerce moving freely again. I am not advocating taking unreasonable risks or unwise speculation, but rather the exercise of a bit more confidence in the future, instead of so much nervous fear at one's own shadow. If we can only secure this re-establishment of confidence, combined with a long period of industrial peace, our trade both at home and abroad will quickly become restored to a condition of real stability. The markets of the world need our production and with a restoration of confidence between the peoples of each nation, a satisfactory resumption of trade would soon follow. It is quite certain that it is only by the free flow of trade between each and every country that the world's permanent recovery can be achieved.

EDWIN F. STOCKTON.

Sir Frederick Mills, Bart.

(Chairman of the Ebbw Vale Steel, Iron and Coal Co.)

On all hands it is apparent that a steady increase in trade is possible if two particular conditions are obtainable.

First, that there should be some better approach to international peace and understanding; and secondly, that Labour must recognise that there can be no prosperity for them nor for others until they are prepared to produce the largest quantity of goods, manufactured in the most workmanlike manner.

In regard to the first, obviously our wonderful Prime Minister, with his restless energy and resource, was perfectly right and justified in attempting to secure an understanding in Europe by means of the Conference at Genoa.

By the time this article is published, we shall no doubt have learnt, at first hand, just what was accomplished, and what were the difficulties in the way of a complete and satisfactory arrangement.

I venture to prognosticate that it is because certain countries, like certain people at home, demand results without work.

Russia, for instance, must provide food and raw materials, and acknowledge its debts, before it can hope to trade with commercial people. The production of food will take time, but the production of raw materials can be instantaneous, and so can acknowledgment of debts.

Failing a settlement in conference, politicians should now drop the discussion, and leave it to financial and commercial people to make the best arrangement they can, and with whom they can. The basis of trade is sanctity of contract, and commercial people are quite capable of securing the necessary undertakings and guarantees before they consent to trade. This process is known to a sufficiently large number of people in all countries, and it is only because politicians think they can get something for nothing that Europe waits.

At home we have the same symptoms. In all trades we are far below the standard of excellence where workmanship is involved, that made England supreme in manufactures. The "slap-dash" methods—the outcome of haste during the war—has left us all somewhat sloppy. We must eradicate this fatal result, and each of us must try to get back to good workmanship.

Again, the "something for nothing" principle is too much in evidence. "By thy labour shalt thou eat bread" is as true to-day as ever it was, and we must always recog-

nise that whatever may have been promised, and whatever we may have hoped for "after the war" each of us, we have got to work harder, and with greater intensity, and with greater care, in order to secure a return to the prosperity and comforts of our pre-war days.

FRED. MILLS.

Mr. George Terrell, M.P.

In almost every industry in every part of the world, we are being under-sold by the products and commodities of other countries.

Germany is hitting us hard, and as a result of her collapsed exchange is supplying our markets with goods at prices against which we cannot possibly compete. The German competition is, however, unfair competition. Her people are not taxed as our people are taxed, and consequently she is able to manipulate a double value to the mark—internal and external—which gives her an enormous advantage in all competitive markets.

The remedy is to insist that the recommendations of the Reparation Commission in regard to the increase of internal taxation in Germany, and the stopping the printing of further paper money, be rigorously enforced. If this were done, we would find the cost of production in Germany increase by leaps and bounds, and though she would not be excluded from the markets of the world, yet the competition would be fair competition, and not grossly unfair to our people as it is at present.

Another point of importance is economy in our national expenditure. We have to cut down very considerably our cost of Government, with the object, of course, of being able to reduce taxation. Excessive taxation is crushing industry, and is responsible to a large extent for the present depressed state of our export trade.

One other subject which requires consideration at the present moment—whether the law in regard to Trades Unions and Labour does not require revision. Strikes and lock-outs have been responsible for much of our present trouble. It is a crude method of settling Labour disputes. It is a subject which the Government should take in hand, with a view to settling some method of procedure which must be adopted before either an Employers' Organisation or Trades Union can order a strike or lock-out to the detriment of the community as a whole.

GEORGE TERRELL.

Sir Charles Macara, Bart.

Wages and transportation costs will no doubt have to be lowered further here, as in America, before we can get down to a proper working basis, though no one in England expects or wishes to see wages fall again to their pre-war level, but the need above everything just now is that the Government should cease to throttle the life out of industry by the demands they are making upon it in the way of taxes.

We, in England, made too great a fetish of restoring our credit in the shortest possible time, instead of seeing to it that our people were got back to full employment. Our credit would have taken care of itself if we could have kept all our machinery in full work and our people earning wages. As it is, we have set ourselves the task of paying off our debts in about twenty years, a far shorter period than any other continental ally, and even shorter than a neutral country like Holland. The result has been that while we have been levying high taxes, we have been paying huge sums in doles to the unemployed, and thus dissipating our substance at both ends.

There are signs that England is becoming wide awake to the necessity of making things easier for those responsible for the conduct of industry. The abolition of the iniquitous Excess Profits Duty, which had the effect of raising all commodities at least 100 per cent., is undoubtedly a relief, and if this can be followed by a reduction in the Income and

other taxes, and the lopping off of wasteful Government expenditure, we shall no doubt be able to make a much better showing in the next financial year.

I have no doubt at all that we shall rectify our mistakes in the long run, although it is exasperating to see business held up for such a length of time owing to the futility of allowing unpractical men to handle practical affairs. With an exceptional knowledge of world conditions, gained in taking part in international work of various kinds, I cannot help being an optimist as to the future, and I hope I am one of those optimists who have their feet on the ground.

"Get the world to work," has been my cry, first, last, and all the time, for there is nothing in the situation of England—or, for the matter of that, of any other part of the world—that cannot be cured by honest work and plenty of it. This should be our paramount aim, for money has to be earned before debts can be paid. With the world in full work again the problems that now fret us would solve themselves. As it is, we are putting the cart before the horse, and making real progress impossible.

CHARLES W. MACARA.

The President of the Board of Trade*

The reputation of our country stands high in the world and it is a reputation which has been raised by our traders. The reason that to-day we are still holding our own in our great markets overseas in China, India and South America, and hope to reap our reward later on, is because in those countries for generations our traders have gone forth. They have lived there, traded there, they have known the people, known the markets, and they have taught the people in those markets to rely on the Englishman's word, on the quality of his goods and on the justice with which he treats contracts. It will be for the generation of to-day to live up to the reputation earned by those who went before, realising what an asset that is to us to-day, and seeing that, while reaping the benefit for themselves, they pass on that great heritage undimmed. We have in this country an amount of inherent aptitude for business and of knowledge of business, greater than exists in any country of the world, and we still have initiative, and as long as the initiative of the individual is allowed free play I have no fear but that we shall penetrate into the markets of the world in the future and hold them as we have done in the past, and, if I may say so here, I think that the attitude of the Government in these matters should be one of kindly but quietly intrusive beneficence.

Our position in England differs, certainly in degree, from the position of any other country in the world, because to us, above all countries, the root problem is to find employment for our own people. We have to export for our life—export for our food. We have to pay for our food with our exports, and to export we must have raw materials. One aspect of this question causes me anxiety, and that is the attempted discrimination which is now being made in certain maritime countries against our shipping. Our shipping is the vital link in the whole system of our commonwealth of nations. Anything that imperils that imperils not only this country, but every one of our Dominions, and I hope that the Mother Country and the Dominions will take earnest counsel together on this matter before it is too late, so that we may show, in this respect at least, a united front against any attempt that may be made to discriminate against us to damage the position of our shipping.

The firm of O'HARA & HOAR, colour merchants, of 13, Fish Street, London, announce that their offices have now been moved to 20, 28, and 30, Thomas Street, Burdett Road, London. Their telephone numbers are East 4900 and 4901.

* From a speech in the House of Commons, May 11, 1922.

Manufacture of Pure Naphthalene

By "LATEX"

NAPHTHALENE, $C_{10}H_8$, is a very important raw material for intermediates, dyes, etc., but has also a wide application as a finished product. In the former capacity it is the starting point in the manufacture of the A. and B. naphthols, the nitronaphthalenes, naphthalene-sulphonic acid, etc. These materials are of great importance for dyes, explosive diluents, tanning reagents, and various equally important functions. As a finished product, naphthalene is well known as a disinfectant for sanitary purposes, and enjoys a large sale for use as "moth-balls." It is also of great importance for curing skins or preserving pelts and hides until they can be dealt with more carefully at the tannery. Russia was a great consumer in the past. In a crude condition naphthalene is used in considerable quantities for the manufacture of fire-lighters. In most commercial applications, however, a high degree of purity is essential, as subsequent operations for intermediate manufacture are frequently dependent upon a high standard of purity in the commercial product. Under these circumstances there is a considerable quantity of naphthalene put on the market as "pure" which leaves much to be desired both in point of colour and purity as shown by melting point. It should, therefore, be of interest to consider a method of manufacture which, properly run, will give a product of almost theoretical purity and a melting point of 79.8°C .; as against the pure product of recrystallisation which melts at 80.0°C .

Methods of Manufacture

Methods of manufacture differ very widely in detail, but it is agreed that the desired state of purity is generally obtained by the concentration on mechanical efficiency rather than chemical adroitness. The process commonly used consists in the production of a crude naphthalene or "salts" from the tar oils. It is desirable that the fraction of oil containing the naphthalene in crystallisable quantity should be closely "cut" to include only traces of anthracene and its associates, and for this purpose the "carbolic oil" fraction is most suitable. Naphthalene, however, occurs in higher fractions, but this can either be produced as "creosote salts" for fire lighters, etc., or redistilled. The carbolic oil from the tar stills is first washed free from tar acids; which process permits the naphthalene to crystallize out much more freely. After washing, the crude naphthalene is drained from the liquid creosotes by pressure filtration with a force pump. This is more desirable than allowing the liquid to filter by gravity. The crude product remaining after pumping off the liquid oils is the basis of a successful "pure" product and should contain a minimum of creosote. The minimum is obtained by estimating the liquid remaining in the laboratory, and the pumping is carried on until the desired freedom is attained. The crude salts in the process under description are not put through the process of centrifuging, as it is impossible by this method to eliminate the last traces of oil. "Whizzed" naphthalene has a ready sale, but is not preferable as a source of "pure."

"Pressing" the Salts

A better plan consists in "pressing" the salts at a high temperature in hydraulic presses. By this means a crude naphthalene can be obtained with a melting point of 79.3°C . or 79.4°C ., of good colour. For this purpose the "salts" from the filters are melted up and cooled in mechanically agitated coolers till crystallisation occurs. The crystallisation is only partial since the temperature is so high as to prevent a solid mass from forming. These agitators deliver to the presses a product of the consistency of porridge; any oil being present dissolved with some naphthalene, the excess of which occurs in the paste as individual crystals of oil free $C_{10}H_8$. The process is, therefore, really one of fractional crystallisation. Anthracene shows up at this stage. If this is present as more than a trace, a greasy slurry is formed which cannot be successfully pressed. The paste is then charged into the cylinders of the press, which is worked at a pressure of 2 tons per sq. inch. The cylinders of the press are heated by steam to prevent further crystallisation. On closing the cylinder and pressing, the oil is expressed, leaving solid cakes of a melting point of 79.3° or 79.4°C . The expressed oil is then redistilled and reworked. The pressed crude is of a melting point unobtainable by other means than hot-pressing, and all that remains is to wash and redistil this "pressed" $C_{10}H_8$ to give requisite colour and a further increase of melting point to 79.8° . The cakes of

"pressed" crude are broken up, melted and delivered to the washing plant, where they are treated with successive washings of concentrated H_2SO_4 , the total amount used being about 2½ per cent. by weight of the naphthalene. To minimise sulphonation the temperature of the washer should be maintained at not more than 100°C . The sulphuric acid is allowed to settle after agitation, and run off as waste. Any entrapped acid is washed out by dilute caustic and finally by water.

The washed naphthalene is then redistilled in fire-stills, the first fraction being reworked as pressed, as it contains moisture such as to reduce the melting point to much less than 79.8°C . The condensing naphthalene must be carefully watched as it is liable to choke the condenser coil. The coil water is kept at a temperature of about 100°C . by steam. As the melting point of the distillate improves, tests are rapidly carried out and the melting point estimated. As soon as 79.6°C . is obtained, the naphthalene distillate is run as pure, and can either be collected in galvanised iron tubs or run through a flaking machine. When the distillation is practically finished, the melting point will fall again, but it is usual to stop the still and recharge from the washer before this stage is reached. The finished article is a naphthalene of dazzling whiteness, of a melting point of at least 79.8°C . and of such purity that it will not discolour with keeping. Theoretical purity can be obtained from this product by recrystallising from hot benzene, the pure product being crystallised out in transparent flat crystals of melting point 80.0°C . The final product, however, is usually the material obtained from the still, as a melting point of 79.8 is sufficiently pure to meet the demands of intermediate manufacturers. When remelted this product is entirely colourless and will scarcely discolour pure sulphuric acid if the latter is added at a temperature of 100°C .

Pure and Applied Chemistry Conference

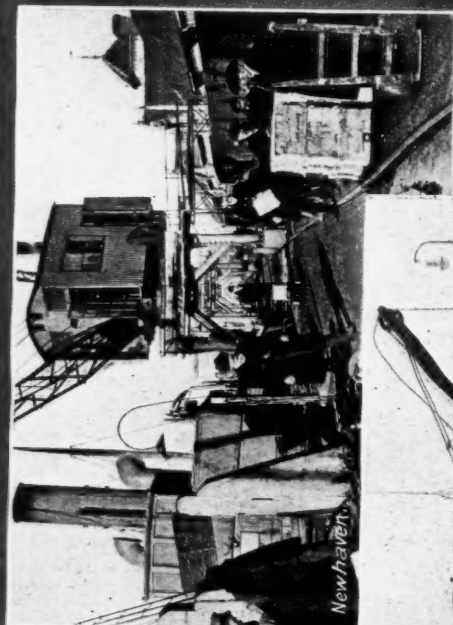
THE next International Conference of Pure and Applied Chemistry will be held at Lyons on June 27-July 2, and a variety of topics of interest to chemists will come up for discussion. The former International Committee on Atomic Weights has now, in consequence of the recent work on isotopes, become an International Committee on the Elements, and the British representatives are Professor Soddy and Dr. Aston; another committee is considering a uniform system of abbreviations and a third is dealing with the preparation of research chemicals. The Federal Council for Pure and Applied Chemistry has asked Mr. F. H. Carr to act as correspondent for this committee. Mr. A. Chaston Chapman is acting as correspondent, in conjunction with the Society of Public Analysts, in connection with a project for the standardisation of food analysis, and Dr. Mellor has been appointed to put forward the views of British chemists in relation to ceramic matters. Most countries (*Nature* states) which are represented at these conferences have a fund from which the expenses of the delegates can be paid. Great Britain is an exception, and the Chemical Society has in a very public-spirited manner agreed to pay the travelling expenses of two of the delegates from this country. Some other bodies should follow this excellent example, in order that Great Britain may take an adequate part in the regulation of those chemical matters which are capable of international treatment. To meet together in foreign parts, making the acquaintance of chemists from divers countries and comparing notes, helps to advance knowledge.

Dr. T. F. Sibly raised the question of the relative degrees of attention given to pure and applied science. The latter, he said, was greatly in favour in these days, perhaps largely as a result of the war. This was quite natural, and well; but the pendulum had swung a little too far towards the technical science side.

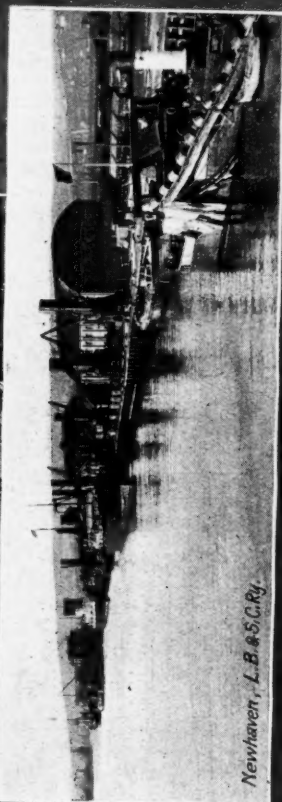
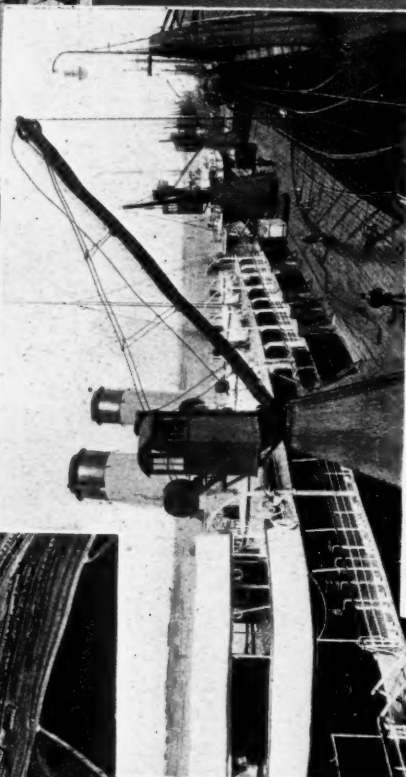
Dr. J. C. Irvine thought that higher study and research should be controlled within every university by a board with power to recommend additions to and promotions of members of the teaching staffs of departments actively engaged in research, and the allocation of money voted for research purposes.

Physical Properties of Tetryl

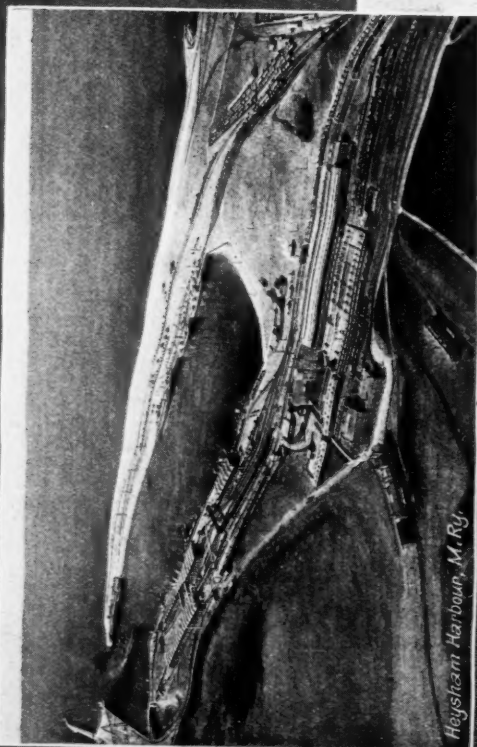
FREEZING point curves on tetryl and T.N.T. mixtures in various proportions are being determined at the Pittsburgh, Pa., experiment station of the Bureau of Mines. The results may lead to a method of analysis based on freezing points.



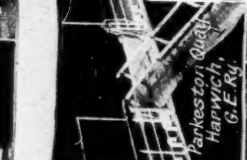
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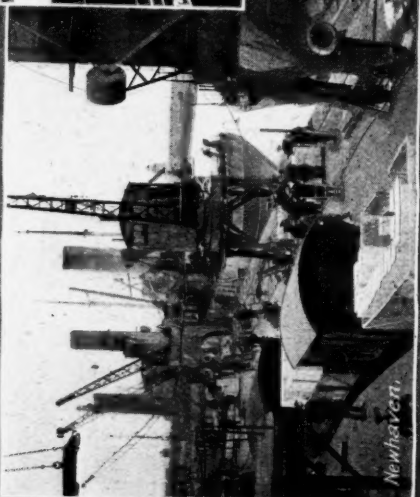
Newhaven, L.B. & S.C. Ry.



Heysham Harbour, M. Ry.



Yarkeston Quay,
Harwich,
G.E. Ry.



Newhaven.

The Chemical Markets of the World

Trading Fields for Manufacturers and Merchants

We give below a specially prepared collection of information relating to British Dependencies and Foreign Countries which represent actual and potential markets for British chemical products. These lie mainly outside the limits of our own Empire, and call for increased attention from British manufacturers and merchants who are searching for new trade outlets. Acknowledgement should be made of the considerable assistance received from officials of the Department of Overseas Trade in the compilation of these notes—assistance which may truly be described as typical of the Department's readiness to co-operate in all efforts for the development of British overseas trade. It is hoped that this first instalment will be supplemented from time to time by similar notes on other groups of markets.

The Balkans

Kingdom of the Serbs, Croats and Slovenes

THERE exists a general demand for chemicals and drugs, but British manufacturers are faced with keen competition from Germany, which is in a position to quote much lower rates owing to its proximity and favourable exchange. The following table of imports will furnish a brief idea of the demand:—

CHEMICAL AND PHARMACEUTICAL PRODUCTS OF AN INORGANIC NATURE.				
		Kilos.		Dinars.
1918 .. .. .	.. .. .	224		1,810
1919 .. .. .	.. .. .	44,147,425		105,794,445
1920 .. .. .	.. .. .	63,029,771		137,891,533

ANILINE DYES.—The peasant is the principal user of dyes for textiles, including carpets. Although a fairly large trade is done, it is merely a retail one, the dye being usually put up in one-kilogram tins. British dyes destined for this market should be similarly packed. Indigo is in greatest demand. The above applies to the Batacka district, north of the river Danube in Vojvodina. In the Skotlje district, the total consumption per annum is said to be 100 tons, supplied in the past by Germany.

FERTILISERS.—The demand for fertilisers, such as copper sulphate, is not general.

Roumania

Roumania offers a fair field for chemicals, of which the following seem to be the most important:—Fatty acids, sulphuric acid, sulphate of copper, caustic soda, Fuller's earth, ammonia, almond linseed oil, drugs and pharmaceutical preparations of all kinds.

There are 187 factories in Roumania itself, engaged in the chemical industry. Of these, 5 employing 427 men produce sulphuric acid, but the quality not being good, the major portion of those products consumed in Roumania is imported. Sixty-nine factories are engaged in petroleum refining and fifty manufacture soap and candles; the quality of these is not good, but they are able, thanks to low prices, successfully to compete with foreign products. The Roumanian Government affords special protection to the local production of sulphuric, nitric, and acetic acids, and pyroligneous acid, caustic soda, sulphate of copper, and sulphate of soda.

As regards drugs, perfumery, etc., prospective British exporters to Roumania must be prepared to face foreign competition, particularly German. Perfumes are subjected to high duties, as they are considered to be luxury goods. The following are the figure of United Kingdom exports of chemicals to Roumania in 1919 and 1920, the last two years available:—

		F.O.B. VALUES.	
CHEMICAL MANUFS. & PRODUCTS:		1919.	1920.
Soda Compounds .. .. .	.. .. .	£12,313	£42,252
All Others .. .. .	.. .. .	£213,773	£50,181
Drugs .. .. .	.. .. .	nil	£7,723

Bulgaria

Drugs and chemicals are imported chiefly from Germany and Austria and in much smaller quantities from France, Switzerland and Italy, England coming last on the list.

Up till now only such heavy chemicals as copper, sulphate, iron sulphate, sodium bicarbonate, caustic soda, etc., were imported from England. There exists a considerable demand for caustic soda, which is employed in the manufacture of soap, and sulphate of copper, which is required for lime spraying.

England and English products are undoubtedly popular in Bulgarian commercial circles, and it should be possible to

develop our connexion with the Bulgarian market. To effect this, British firms should extend the same facilities as the Austrian and German, and offer the same articles, if not at a lower price, at least the same rate as their trade rivals. The exchange question, of course, is a serious adverse factor in this connexion.

The appointment of competent agents in Bulgaria, however, and the sending out of travellers to secure orders would be of great help. This was Germany's secret, and also the easy and rapid communications between that country and Bulgaria. The chemical products imported from England during 1920 amounted to 1,131,559 kilos of a value of 10,140,805 leva.

The Levant

For trade purposes at the present time Syria, Palestine, and the Eastern littoral of the Red Sea may be regarded as one market. All these territories, except perhaps Palestine, are suffering from the severest commercial depression, and business generally is lifeless. As a result of this depression the utmost caution is essential in all matters of commercial finance. The greatest care should be exercised before entering upon any definite commercial transactions and terms should be sterling against documents in London. Some brief detailed particulars regarding Greece, Turkey, Persia and Mesopotamia may be of interest.

Greece

HEAVY CHEMICALS.—The country is suffering from the world-wide trade depression, and caution is necessary here with regard to methods of financing shipments. There has been normally a particularly strong demand for sulphate of copper, carbonate of soda and caustic soda. Before the war the Greek imports of sulphate of copper approximated 2,500 tons per annum, this amount being used principally for the treatment of currants and grape vines. The United Kingdom was a large supplier of this commodity until the outbreak of war; owing to the prohibition on the export of copper sulphate from the United Kingdom during the war Greek requirements were largely supplied by America. It is probable, when conditions improve, that American competition will be strong in this market. Sodas are in large demand in Greece in normal times for use in local soap factories; the United States and Egypt have formerly been the chief sources of supply.

FINE CHEMICALS.—Prior to the war this trade was almost entirely in the hands of the Germans. In recent years, however, Swiss manufacturers have made some progress in this market. They specialised in preparations such as aspirin and urotropine, but failed to secure a firm hold on the market owing to the alleged inferiority of their goods. France also supplied a certain quantity of fine chemicals, but their trade was confined mainly to quinine, bismuth salts, iodine preparations, peroxide of hydrogen and certain acids. A few United Kingdom firms have some regular Greek clients, but, taken as a whole, neither France nor the United Kingdom can at present be considered to be competing with Germany in fine chemicals.

Turkey

Uncertain political conditions prevailing in Turkey at the present time render it a somewhat difficult and unsatisfactory market to review. Normally the demand for chemicals and pharmaceutical preparations in Constantinople is very large, and prices, on that account, are correspondingly high. During the war large supplies of chemicals were received from Germany, but after the Armistice imports from that country were only allowed in small quantities. Before the war there was a demand in South Russia and the Caucasus States for chemicals, and these territories obtained their supplies from Constantinople; at the present time, however—largely owing to

difficulties in negotiating payments—it is probable that this demand has almost ceased. In normal times there has been a demand from the Crimea for sulphuric acid and sulphur in powdered form, and also for tanning materials. In the existing state of affairs it is probable that this demand also has completely ceased. A few of the principal chemicals or pharmaceutical preparations used in Turkey are: Camphor, iodine, carbolic acid, nitrate of bismuth, pepsin, aspirin, citric acid, salol, turpentine, chloroform, permanganate of potash, potassium bromide, ether, petroleum jelly, copper sulphate, boracic acid, morphia, glycerine, etc.

As Turkey has no chemical industry all the above have to be imported, and it is considered that the future demand is likely to be great. It is also thought that there should be a good market here for dyes, especially for use in the textile trade, which requires mordants, sizings, &c. There are in Turkey manufacturers of industrial preparations from wood and a tanning industry, who are users of chemicals.

Persia

Persia, too, has suffered acutely from her own political difficulties, as well as from the unsettled condition of her neighbours. The demand for drugs in Persia is a large one, but the market for chemicals lies almost entirely in the carpet industry. The Persian Government, however, have placed heavy restrictions on the importation of aniline dyes, owing to the bad effect that such dyes have had on the high reputation of the carpets manufactured in that country; this section of the market is thus very small.

Persians are large consumers of drugs, the total imports in 1920-21 amounting to kranas 3,214,015, of which sum the United Kingdom was responsible for kranas 1,326,418, and India for 1,298,821. It should be remembered, however, that there is nothing to show what proportion of these commodities was actually manufactured in the exporting countries. Photography is one of the several western arts which have taken a firm hold, though on a small scale, in Persia, and the use of photographic materials of all kinds, while not yet large, is increasing. The big photographers do not, as a rule, attempt dealings with foreign exporters, and do not understand that part of the business. They obtain their supplies from Persian pharmaceutical chemists as a side line to their drug imports.

Mesopotamia

For chemicals generally the demand in Mesopotamia is likely to be small, but for drugs and pharmaceutical preparations there is undoubtedly a growing market. The British occupation of the country and its resultant organisation of hospitals and dispensaries provided for the use of the native population, has had a most enlightening effect on the Arabs. They have acquired a liking for British drugs, and it is reasonable to suppose that so long as Mesopotamia continues to be administered under the guidance of a European power the demand for European drugs will continue and increase, at any rate with the population of the towns.

At the present moment, however, Mesopotamian trade is suffering from a very severe depression, and unless goods are being shipped through one of the old-established houses specialising in Mesopotamian trade it is most advisable that the necessary credit should be opened in the United Kingdom before any goods are despatched.

North Africa

Egypt

The imports of chemical and medicinal products and perfumery into Egypt in 1921 amounted to £2,399,716, while in 1920 imports of these goods reached £5,530,829. The decrease of £3,131,113 is due, no doubt, to the world trade depression, which has had an adverse effect on Egyptian trade, and to the lessened production and demand for Egyptian cotton, which, of course, curtails to a great extent the purchasing power of that country. British imports of the above mentioned goods amounted in 1920 to £1,514,653, and in 1921 to £594,326, the chief competitors being France, Greece, Belgium, Italy and Germany.

There is generally a good demand for the following: Alum, ammonia, aniline salt, bicarbonate of potash and salt, caustic soda, cream of tartar, soda crystals, sulphate of ammonia, sulphuric acid, tartaric acid, etc. The principal competing countries exporting the above commodities are France, Italy,

Holland (sulphuric acid), Belgium (caustic soda), and United States of America (aniline salt).

Owing to the low rate of exchange, French proprietary and patent medicines are arriving in Egypt at very low prices. During 1920, imports of medicinal preparations and specialities from France amounted to £218,722, of a total of £471,381, whilst in 1921 France's share of trade in these goods was £111,747, of a total of £266,369. French trade in perfumery and cosmetics is also large, the figures for 1920 and 1921, respectively, being £220,926 of a total of £298,587, and £76,540 of a total of £103,086.

It is also interesting to note that a great number of orders for drugs and galenic preparations are going to France, although in most cases, however, the senders of the orders are finding that delay ensues on the part of the French houses in the despatch of the goods.

DYES.—With startling rapidity the German dyes are returning to the Egyptian market, although the position of the United Kingdom in that trade was very promising up to 1920, when, with the exception of Switzerland, the total imports were in the hands of British firms. The following are the statistics of the imports of dyes into Egypt in 1920 and 1921:—

SYNTHETIC INDIGO.

	1920. £.	1921. £.
From United Kingdom	20,314	8,907
From Germany	85,335	89,933
From Switzerland	17,101	4,679
From Other Countries	318	15,640
	£123,068	£119,159

OTHER DYES.

	1920. £.	1921. £.
From United Kingdom	639	893
From France	546	351
From Germany	—	550
From Other Countries	655	419
	£1,840	£2,213

OTHER COAL TAR DYES.

	1920. £.	1921. £.
From United Kingdom	17,439	3,383
From Germany	15,451	19,447
From Switzerland	7,149	5,081
From United States of America ..	5,050	1,350
From Other Countries	1,266	2,267
	£46,355	£31,528

In 1920, goods under the heading of chemical and medicinal products and perfumery, to the value of £679,177, were exported from Egypt, mostly to the various Levantine countries, whilst in 1921 the exports of those goods fell to £309,955. The exports consisted principally of phosphate, caustic soda, common salt, household soap, gum arabic and senna. So far as is known there are only two firms in Egypt engaged in the manufacture of chemicals, etc. One of these is at Alexandria, and is owned by a private concern who are holders of leases from the Mines Department. The following chemicals are manufactured by the firm from minerals produced in Egypt: soda ash, sulphate of soda B.P., sulphate of magnesia B.P., carbonate of magnesia, bicarbonate of soda, soda crystals, caustic soda, lixivium (soap saver), alum, glue.

The other firm is a company with British capital formed for the exploitation and manufacture in Egypt of paints and colours from the deposits of iron oxides and other mineral colouring matters which were used by the ancient Egyptians for decorative art.

More than half of the total imports into Egypt are imported in large and small quantities by commission agents for wholesale and retail distribution by local retailers, and in the case of goods for native consumption it would probably be advisable for British firms desiring to trade with Egypt to appoint a resident agent. In the present state of the market, however, it is essential that stringent inquiries should be made regarding the standing of the prospective agent. Specialisation is not practised by the commission agents as a general rule, as owing

to the smallness of the market for any one class of goods it is necessary for the agent to concern himself with several agencies in order to obtain a living. In the case of direct orders it is advisable to insist on, say, 20 per cent. cash with order, and balance cash against documents, unless a first-class report is given by the customer's bankers regarding his commercial reputation and financial standing.

Morocco

The latest available information showing the imports of chemicals and drugs into Morocco are those for 1920, and these are shown below:—

FRENCH ZONE.			
	Weight in Metrical Quintals.		Value in Francs.
From All Countries	18,828		2,661,707
From United Kingdom	1,353		259,220
From France	16,795		2,333,002
TANGIER ZONE.			
	Weight in Metrical Quintals.		Value in Francs.
From All Countries	1,203		654,799
From United Kingdom	431		123,956
From France	421		344,543
From Spain	230		147,089
MELILLA (SPANISH ZONE.)			
	Weight in Metrical Quintals.		Value in Pesetas.
From All Countries	4,074		782,505
From United Kingdom	79		14,850
From Spain	3,957		756,874
From France	36		10,091

The demand for heavy chemicals is not large owing to the small European population and the lack of industries using such commodities. The following list of requirements in Casablanca may be taken as typical more or less of the demand in other centres of Morocco for household and industrial chemicals:—Lump alum, caustic soda, iron sulphate, calcium carbide, mercury, starch. There is a demand in Fez and other centres for potash for use in the native industry of soft soap making.

Drugs, etc., are in demand for the small chemists' shops established in the French and Spanish Zones. Supplies are obtained principally from France and Spain although British chemicals and patent medicines are gradually finding a market in both the zones mentioned.

Two well-known British houses have found it profitable to appoint agents in the principal towns on a 5 per cent. basis. The usual terms of payment are 30 to 60 days' credit, subject to satisfactory bank references being furnished.

The Far East Netherlands East Indies

The following figures show the quantities in kilograms of the more important lines of chemicals imported into Java and Madeira in the last three years from the principal exporting countries:—

UNITED KINGDOM.			
	1919.	1920.	1921.
Alum	66,793	220,891	58,365
Calcium Carbide	—	139,500	10,000
Caustic Soda	726,401	1,362,060	478,574
Sodium Sulphate	1,109,870	1,775,583	1,062,475
Copper Sulphate	—	150,951	176,400
Iron Sulphate	9,009	140,898	117,600
Sulphuric Acid	—	—	—
Ammonium Sulphate	14,201,000	30,348,000	24,965,000
UNITED STATES OF AMERICA.			
	1919.	1920.	1921.
Alum	—	—	—
Calcium Carbide	246,055	87,345	119,000
Caustic Soda	1,461,151	1,671,632	55,482
Sodium Sulphate	435,826	465,507	4,102
Copper Sulphate	—	—	—
Iron Sulphate	—	—	—
Sulphuric Acid	4,560	260,769	37,500
Ammonium Sulphate	10,838,000	47,039,000	15,137,000
GERMANY.			
	1919.	1920.	1921.
Alum	—	51,000	140,390
Calcium Carbide	—	—	86,500
Caustic Soda	—	—	—
Sodium Sulphate	—	—	13,159
Copper Sulphate	—	—	29,705
Iron Sulphate	—	—	126,605
Sulphuric Acid	—	—	102,440
Ammonium Sulphate	—	—	8,645,000

JAPAN.			
	1919.	1920.	1921.
Alum	231,574	5,011	12,202
Calcium Carbide	—	—	—
Caustic Soda	10,770	705,305	3,224
Sodium Sulphate	69,806	2,090	7,280
Copper Sulphate	—	—	—
Iron Sulphate	—	—	—
Sulphuric Acid	859,518	582,291	164,690
Ammonium Sulphate	1,787,000	24,250,000	135,000

Competition for the chemical trade of the Netherlands East Indies is very keen between the four countries mentioned above. The most noticeable features in these statistics are the rapid strides made by Germany during 1921 to recover her pre-war position and the falling off in the exports from Japan.

Indo-China

In the absence of any general information on the chemical trade in this French colony some particulars from the Customs returns may be of interest. The following chemicals form 70 per cent. of the total imports; the percentage of each product and the percentage imported from the principal suppliers are shown:—

Calcium carbide, 18 per cent. (90 per cent. of this from Japan); sulphate of iron, 15 per cent. (99 per cent. from Hong Kong); potash and potassium carbonate, 11 per cent. (97 per cent. from Hong Kong); caustic soda, 10 per cent. (44 per cent. from France, 36 per cent. from Hong Kong, and 17 per cent. from U.S.A.); "alum ammoniacque," 9.5 per cent. (99.6 per cent. from Hong Kong); carbonate and bi-carbonate of soda, 4 per cent. (53 per cent. from Hong Kong and 33 per cent. from France); and lead oxide, 2.5 per cent. (47 per cent. from Hong Kong and 40 per cent. from France). With regard to the large proportion of imports coming from Hong Kong, it should be mentioned that they consist of cargoes transhipped at that port, the country of origin not being shown.

The import trade is in the hands of several French houses at Saigon and Haiphong, and all correspondence with them should be carried on in the French language; all catalogues, to receive attention, should be in French, with quotations in terms of the metric system.

A large chemical factory has recently been established at Haiphong by the Société Industrielle de Chimie d'Extrême Orient, where the following chemicals are to be manufactured on an extensive scale:—Caustic soda, chlorate, chloride of lime, hydrochloric acid, liquid chlorine, calcium carbide, ammonia, sulphuric acid, and carbonic acid.

China

Detailed statistics of the value of the trade in chemicals are not available, as the returns published by the Chinese Maritime Customs are grouped together under general headings. The latest available import figures (for 1920) are as follow:—

	Value— Halkwan Taels.
Chemical Products (not including match-making materials, medicines, and soda)	2,291,203
Match-making materials (not including paraffin wax) ..	1,893,670
Soda	2,308,669
Sulphur	128,032

The average value of the Halkwan tael in 1920 was 6s. 9½d. The following table shows the principal countries of origin, with the value of goods imported from each:—

	United Kingdom. Hk. Tls.	U.S.A. Hk. Tls.	Japan. Hk. Tls.
Chemical Products ..	225,123	579,977	1,039,780
Match-making Mate- rials	52,579	41,617	1,371,706
Soda	1,609,720	81,208	431,319
Sulphur	—	—	93,363

The most important imports are soda ash and caustic soda, shipments of the former amounting in 1920 to about 40,000 tons, and of the latter to about 3,000 tons. The trade is largely controlled by an important British firm having an extremely well-organised system of distribution.

Amongst other chemicals in which a considerable business is done are: Sulphuric, nitric and hydrochloric acids, alum,

bleaching powder, calcium carbide, glycerine, phosphorus, chlorate of potash, and saltpetre, but statistics of imports are not available.

Siam

The chemical trade of Siam is small compared with that in other countries, but it is developing and is undoubtedly capable of expansion. The present annual import of "Chemical Products generally," ranges in the neighbourhood of one million kilograms, as compared with three-quarters of a million in 1913-14. In this market the British manufacturer's keenest competitor is Japan, and she is the more dangerous as a certain percentage of her exports to Siam are believed to be close imitations of British goods.

As regards dyes, the German manufacturers had practically a monopoly up till 1914, and if the United Kingdom is to increase or even maintain the footing gained during the elimination of the German products, no time must be lost in cultivating the market, for not only have the Germans already regained a considerable portion of their lost trade, but China and America are also formidable competitors, the latter in the aniline market and the former both in anilines and indigo. Business is practically always done through foreign firms, or through one or two of the large foreign-managed Siamese firms in Bangkok, who then dispose of their consignments in the local market.

Japan

Up till 1914 Japan obtained practically all her chemicals from abroad, but, as supplies were unobtainable during the war, their manufacture was fostered by the Government and she can now produce most of the heavy chemicals required for industrial use both for home consumption and for export. Among the chemicals most extensively manufactured are potassium-bichromate, chlorate, permanganate, carbonate, nitrate, sulphate and ferro-cyanide; bleaching powder, acetic, nitric, muriatic and sulphuric acids, sulphate of iron and copper, precipitated chalk, magnesia carbonate, peroxide of soda, naphthalene, salts of barium, etc., while the following are also manufactured, but not in sufficient quantity to meet the domestic demand:—Caustic soda, glycerine, salicylic acid, yellow phosphorus, formaldehyde, aniline salt, acetate of lime and sulphate of ammonia. The manufacture of carbolic acid, however, has not been developed to any great extent.

During the war the Japanese also developed the manufacture of some of the less complicated dyes, but during the last year or so the native-made product has been unable to compete with the foreign imported dyes, and, now that the market is flooded with German dyes, many of the factories have had to close down.

The chemicals most constantly in demand in Japan and imported in the largest quantities are fertilisers, and of these the one most suited to the Japanese rice crop is sulphate of ammonia, the annual imports of which range from 75,000 to 110,000 tons. The other two fertilisers most in demand are (1) phosphates, of which some 300,000 tons are imported annually, half of the imports coming from within the Japanese Empire, and (2) nitrate of soda, which comes entirely from Chile, and as regards phosphates the demand exceeds the supply by some 100,000 tons.

The position, therefore, is that while in certain lines—particularly in dyes, where Germany, France and America are our principal competitors, and sulphate of ammonia—where America supplies about half of the Japanese requirements—our manufacturers have to face foreign competition, Japanese products are beginning to take their place in the markets of the world and to compete with foreign chemicals.

As regards methods of business, the chemical trade is to some extent done direct with the Japanese importers, but it is generally more satisfactory for British houses to appoint as their agents some go-ahead British firm, already established in Japan, as they are better acquainted with local conditions than the exporter in England. A further reason for dealing only through foreign houses in Japan is that for some time past speculation has been a feature of the chemical trade, and in view of the present depressed condition of all markets in Japan, British chemical manufacturers wishing to deal with Japanese houses direct should only do business by revocable Bankers' Letter of Credit.

Manufacture of Asbestos Products

SPEAKING at the annual meeting of Bell's United Asbestos Co., Ltd., held on May 11 at the Cannon Street Hotel, London, Mr. J. A. Fisher said that in the matter of raw materials there had been some reduction in cost, but in the case of asbestos obtained from Canada this had been due as much to appreciation in the sterling rate of exchange as to any actual fall in the prices charged by mine owners. It was just as important, if not more so, to them as it was to the company, that they also should concentrate their efforts upon effecting reductions in their costs of production and in the prices to manufacturers, rather than combine to reduce output and maintain prices at an artificial level not warranted by the conditions of trade. So far as labour was concerned, there had been indications in the past year of a growing disposition to recognise the difficulties with which manufacturers were faced. What was wanted now more than ever before was that this recognition of difficulties should be transformed as quickly as possible into more active co-operation in overcoming them. Dealing with our overseas trade, Mr. Fisher said that formerly Great Britain was the principal manufacturing country, and competition was practically confined to our own shores. This was the "nation of shopkeepers," and trade rivalry was healthy, because, although costly and even wasteful, it stimulated invention and improvement. Now it was different. We had as a nation to compete with a progressive "world of shopkeepers," and in order to preserve our national position in the world's markets it became more desirable, if not necessary, where circumstances were favourable, to pursue a policy of internal co-operation, to economise, and to secure greater efficiency of service in many ways which united effort alone rendered possible.

The Chlorination of Wool

In a paper read before the Nottingham Section of the Society of Chemical Industry on May 17, Mr. S. R. Trotman, M.A., F.I.C., gave an account of the work carried out by himself and his assistant, Mr. Goodwin, on the chlorination of wool. The extent to which this process had altered the fibres, attacking first the outside scales or epithelial cells, could be seen under the microscope and estimated by means of a microscopic count of damaged fibres. The mechanical tests on tensile strength and elasticity did not reveal the damage until it had proceeded too far. The increased affinity for dyes was also shown only by distinctly unsound specimens. The nitrogen dissolved by decinomial alkali (as revealed by the biuret reaction), and the amounts of soluble and combined chlorine were also useful indications. The uncontrollable chlorination was due to the very crude formulae employed, which, as was clearly shown, must give rise to free chlorine. The chlorine, the author stated, should be supplied in the form of hypochlorous acid, which might have a concentration of 3 grams per litre, which if applied as free chlorine gave 80 per cent. of damaged fibres. The hypochlorous acid could be set free from bleaching powder by boric acid or it could be made separately by allowing chlorine water to stand on an excess of calcium carbonate. All operations should be conducted at room temperature, and the chlorine must be thoroughly washed out of the goods.

New Transvaal Chemical Co.

SPEAKING at the 26th annual meeting of the New Transvaal Chemical Co., Ltd., held on May 10, at Winchester House, Old Broad Street, London, Mr. C. A. Campbell said that considering the enormous depreciations which have taken place in all raw materials and the extraordinary collapse in trade in the early part of last year, he might fairly say that the report for the past year was a very satisfactory one, the foresight of the managing directors in South Africa having provided ample resources for such depreciations. He was glad to say that the serious labour strike in South Africa early in this year had passed over without causing the company any damage to their works and property. The only consequence of importance to the company was the practical stoppage of trade during the best part of three months, although the works were kept going, but, of course, to a reduced extent; they were actually only closed during one week.

Brazilian Centenary Exhibition

Opportunities Awaiting British Chemical Manufacturers

FROM September 7 to December 31 next will be held the Brazilian Centenary Exhibition at Rio de Janeiro. It is being organised by the Brazilian Government to commemorate the completion of one hundred years of Brazilian independence. Practically all the leading Powers have been invited by the organisers to participate, and most of them have not merely accepted the invitation but have voted substantial sums of money to ensure that the industries of their respective countries are adequately represented. The United States, for example, has voted one million dollars for the erection of a permanent building in which to exhibit American goods, after which, at the conclusion of the Exhibition, it will be used as an Embassy.

Reflecting the long view thus shown by their Government, American firms have since applied for space in such quantities that this building is now shown to be insufficient for its first purpose, and private American interests are at work raising a sum to build a second and temporary building in which to display all the American goods which will be shown.

Another energetic competitor of this country in Brazil is found in France, whose Government has voted a sum of 5,136,000 francs (£102,720) out of which a permanent building will be erected to house French exhibits, after which it will be presented to Brazil as a permanent memorial of the occasion. Both Belgium and Denmark have also voted large sums of money for a similar purpose.

Whatever may be thought of such active measures to ensure adequate representation of their countries' industries at the Exhibition, the action of their Governments leaves no doubt of the extreme value in their eyes of Brazil as a market for their countries' goods.

It is time, therefore, to ask what facilities are available for British firms, and what assets this country possesses in a market which is obviously so highly regarded by some of the chief of our competitors.

Both facilities and assets are very considerable. In common with the Governments of our competitors the British Government has accepted the invitation of the Brazilian Government to participate, and has voted a sum of money to ensure that British firms will possess adequate accommodation for a display.

This money is being spent on a permanent building which is being erected in the best part of the Exhibition area and is now well under course of construction. At the close of the Exhibition it will be presented to Brazil as a permanent token of British sympathy with the event it commemorates. In that fact alone will be found an asset of first-rate commercial importance to all British firms who exhibit.

British Repute in Brazil

This country has long commanded the greatest esteem among Brazilians. The part played by Great Britain in securing Brazil's independence, which was officially declared on September 7, 1822, has never been forgotten, and British firms who exhibit goods at an exhibition which marks the centenary of such an event will find that the sentimental ties involved carry with them facilities for creating commercial ties no less strong.

It must be remembered that to Brazilians, already keenly conscious of their nationality, the Exhibition will coincide with a fresh realisation of their country's value and her place in the world's markets. For firms who desire to market their goods in Brazil this is a fact which gives the Exhibition a significance of its own.

In addition to this it is worth remarking that the regard for British goods does not rest on sentimental ties alone.

A high standard of British quality and British methods are equally responsible, and form an asset which cannot be disregarded when marketing goods in Brazil. British methods in particular are very greatly esteemed not only in Brazil but throughout the whole of South America, while in Brazil alone there is an aggregate of some £250,000,000 of British capital invested in Brazilian railways, banks, telegraphs and other enterprises.

With these assets at their disposal it is worth examining the facilities that exist for British firms who desire to exhibit. Expense need be no deterrent. Realising that many firms who could do good business there cannot at present afford the sum necessary to exhibit the actual goods on the scale required, the Department of Overseas Trade, which is organising the British Section, has made arrangements for the display of such goods by means of models, cinema films, lantern slides and so on.

The cost of exhibiting at the Centenary Exhibition on these lines need amount to no more than £30 for the three months of its duration. No additional expense need be incurred for salesmen, the Department having arranged for the presence of representatives to deal with orders and inquiries for exhibitors who desire such help.

Both the Royal Mail Steam Packet Company and Messrs. Lamport and Holt have arranged to carry the goods of exhibitors at half rates, while the Brazilian Government will admit such goods into Brazil free of duty provided that they are re-exported at the end of the Exhibition.

It will be seen, therefore, that the cost of participation is reduced to a minimum, while the possibilities for increased trade are undoubtedly enormous. Some details at the head of this article showed what is thought by the chief of this country's competitors of the opportunity awaiting those who will cultivate the Brazilian market as it deserves.

Comprising twenty autonomous states and the Federal District in which is situated Rio de Janeiro, the capital, Brazil covers an area of 3,275,510 square miles, and is the fourth largest country in the world, occupying 33 per cent. of the whole of the South-American sub-continent. According to the census taken in 1920 the population of this vast country was 30,000,000 inhabitants.

Although Brazil formerly depended for prosperity upon the export of her numerous natural products, chief of which was her coffee crops, the shortage of manufactured goods throughout the world during the war led her to establish many new industries which it is hoped to develop as much as possible.

Opportunities for Chemical Manufacturers

The development of such industries opens up unlimited opportunities for manufacturers of chemicals and chemical products, since no trade or industry can afford to be independent of chemicals in some form or another. British chemical manufacturers, therefore, should find some excellent opportunities here, for, although the chemical industry in this country is still comparatively young, it has already established its reputation for quality and ability to compete with the products of practically any competitor.

Accordingly, the forthcoming Exhibition should prove unique as a medium for selling such products in ever-increasing quantities to Brazil, which is as yet barely on the threshold of illimitable possibilities.

Reference has already been made to one method of exhibiting at the Exhibition. That method, however, does not complete all the facilities available. On both sides of the permanent building two temporary wings are being built in which to display the exhibits of actual goods for exhibitors who prefer that method of exhibiting. For those chemical manufacturers who, while desirous of exhibiting their actual products on a scale as extensive as possible, cannot justify the expenditure required, these two wings contain facilities which should adequately solve the difficulty.

A combined exhibit would, with a minimum of cost, achieve the maximum effect for all the participating firms. There is no need to stress the effect of such a representative exhibit of British chemicals in a country which is only just entering the arena of manufacturing nations. If any additional plea were needed it is provided in the record of the activities of this country's most energetic competitors. If each British trade and industry realises the need for the strongest combative measures this, country need not fear that she will lose her share of trade in a country which is one of the world's richest potential consumers.

Full particulars of charges and forms of application can be obtained from the Department of Overseas Trade, 35, Old Queen Street, Westminster, S.W.1.

Safeguarding of Industries Act

Judgment in Synthetic Camphor Case

The following is the decision of the Referee (Mr. Cyril Atkinson, K.C.), dated May 17, in the synthetic camphor case, the evidence in which was reported in THE CHEMICAL AGE of April 1 and May 6:

"The question in this case for me to determine is whether synthetic camphor is rightly included in the list of dutiable substances, either as a synthetic organic chemical or as a fine chemical. It is necessary to describe clearly the nature of the substance I am considering. There is a synthetic camphor properly so called. It is a camphor produced by complete synthesis, and is known as Komppa's. This synthesis is a purely laboratory process. The substance is not imported, and is not the substance referred to by the expression 'Synthetic camphor' found in the list. It is common ground that the synthetic camphor referred to is camphor produced by treating pinene with hydrochloric acid and oxidising the product camphene. It is said by the complainants that this substance is not a chemical at all, and if it is that it is certainly not synthetic. What is the meaning of 'synthetic'? There is no dispute about the original meaning of the word. It meant the building up of a compound from its elements, or from such compounds as could be obtained from their elements. Probably that remains the strict academic definition. It is given by many writers of acknowledged authority, such as Richter and Schorlemmer. It was also given to me in evidence by Mr. Ballantyne, Professor Hewitt, and Professor Rogers, but I am satisfied that its meaning has broadened, and I propose to take as the definition of the word the broadest definition which has received any general recognition and acceptance amongst chemists.

"I do not think that I am justified in adopting a definition which has not received that general acceptance, and which is recognised only by comparatively few chemists. Dr. Forster agreed that the understanding of the term by a vast number of chemists to-day is a bringing together of elements or radicals to form a more complicated body. It seems to me that that is practically the same definition as that given by Sir Edward Thorpe. Sir Edward Thorpe's definition is the building up of carbon compounds, either from their constituent elements or from groups of differently constituted molecules. Dr. Parry and Mr. Foster Sproxton support that definition, and I do not see that I can be far wrong in adopting it. I have Dr. Forster's assurance that that is still the understanding of the term among the vast majority of chemists.

"One writer, Dr. Schmidt, has adopted a still wider meaning—namely, the totality of artificial methods of preparing complex compounds. So far as I know, nobody else has gone so far. Dr. Forster explained how the word 'synthetic' differed from the word 'artificial.' He said that 'artificial' meant haphazard production, whereas the word 'synthetic' meant a following of each chemical step as it occurred, so that you kept control of the constitution at the intermediate stages. Dr. Forster's own view, while certainly differing in this respect from the extreme view of Schmidt, went considerably beyond that of Sir Edward Thorpe, and he told me—and, of course, I accept it—that his view was held by the leading systematic chemists. I think he put the matter in a nutshell. On the one hand is the extreme view held by the few, including himself; on the other hand is the view still held by the vast majority of chemists.

"The Board of Trade, in their ably drawn case, contend that I ought to accept the ordinary trade or industrial meaning, and submit that that meaning is in fact 'produced by controlled processes resulting in molecular changes of any kind.' The evidence shows that this meaning, so far from being the ordinary one, is the meaning accepted only by the few. I have no evidence of any kind of an ordinary trade or industrial meaning, and the nearest I can get to that meaning is to accept, as I do, that of the vast majority of chemists. I think that in all probability that is the meaning the Legislature had in mind. I think that the word 'synthetic,' as used in the Act, means a building up of carbon compounds either from their constituent elements or from groups of differently constituted molecules by orderly steps, the result of which can be followed, and from which the constitution of the structure can be deduced or inferred.

"So far as I can see, there is no doubt that synthetic camphor is not synthetic within that definition, and I am bound to hold that it has been improperly included in the list as a synthetic organic chemical. It is, therefore, unnecessary for me to lay down any definition of a chemical. It has been urged that I ought to attach weight to the fact that the substance under dispute has been for many years called synthetic camphor. But the truth is that that name was given to it to distinguish it from an already existing substance known as artificial camphor. The latter substance is not camphor at all, but apparently was commonly known as artificial camphor, and this led to the substance in dispute being inaptly termed synthetic camphor. I do not see how I can give any weight to this fact if I am able to arrive at a clear definition of the word 'synthetic,' and if that definition excludes the substance in question.

"There remains to consider whether I can hold that this substance is a fine chemical. Evidence has been given that it is not, and no evidence has been given that it is. Dr. Parry was very emphatic about it, and Dr. Forster was not asked to give any evidence on the point. Bearing in mind the evidence of the degree of purity of the imported substance, and the evidence I have had as to what is a fine chemical, I am satisfied that synthetic camphor is not a fine chemical. I certainly see no reason for not accepting Dr. Parry's evidence on this point. It is agreed that pinene is wrongly included in the list. The fact that it was included seems to indicate that there was some misunderstanding as to these substance. I, therefore, direct that pinene and synthetic camphor be removed from the list, and that the words 'Komppa's synthetic camphor' be added."

Summary of Awards

The Board of Trade announce that judgment has been given by the Referee in arbitrations under Section 1 (5) of the Safeguarding of Industries Act, relating to the following complaints under the above Sub-section. The lists issued by the Board of Trade are amended in accordance with his awards as from May 22:

Nature of Complaint.

(1) That Incandescent Gas Mantles are improperly excluded from the lists of dutiable articles.

(2) That Camphor (synthetic) and Pinene* are improperly included in the lists of dutiable articles.

Judgment.

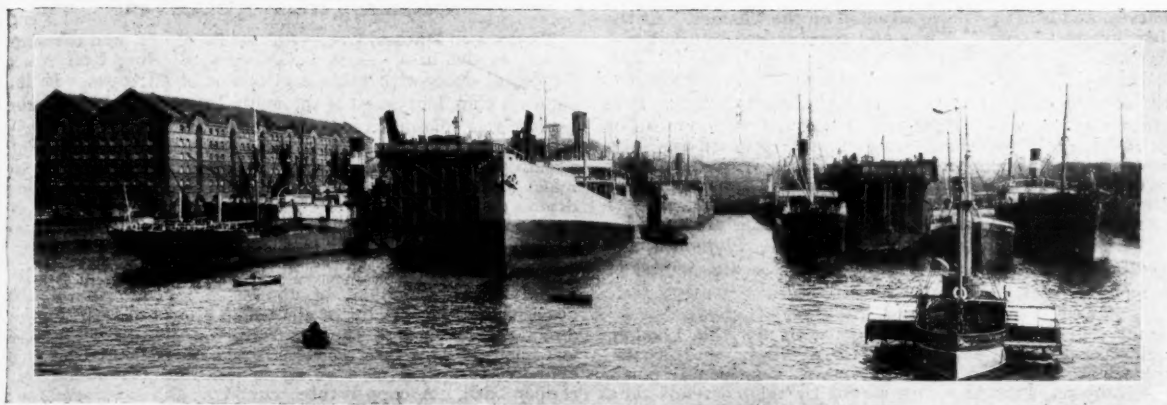
That the lists be amended by including therein "Mechanical aggregates of Oxide of Thorium and Oxide of Cerium and of Nitrate of Thorium and Nitrate of Cerium, being ingredients of Incandescent Gas Mantles."

"That Pinene* and Synthetic Camphor be removed from the list and that the words 'Komppa's Synthetic Camphor' be added."

* Pinene has already been withdrawn from the lists by the Board as from April 6.

Dr. Ruttan's Visit

WE understand that Dr. Ruttan, the president of the Society of Chemical Industry this year, who was expected to reach this country early in May, has had to defer the date of his departure from Canada. He hopes, however, to arrive in time to preside over the Annual Meeting in Glasgow in July.



General View of Tyne Dock (North Eastern Railway)

Railway Transport and Merchant Shipping

Rail and Dock Facilities of the United Kingdom

In view of the wide interest displayed in regard to transport problems and the co-operative efforts of the railway companies in providing every facility for the carriage of goods by road, rail and water, the following notes are given as an indication of the facilities placed at the disposal of the merchant shipper.

SIR OWEN PHILIPPS, in a speech at the annual meeting of Elder, Dempster and Co., pointed out that for many years the company has refrained from engaging in business considered to be competitive with merchants, confining itself instead, in its capacity of shipowners, to providing transport facilities. Alluding to the present tendency of firms to combine, he said the whole position would be altered if any large group of merchants considered it to their advantage to do their own carrying. In the event of such action being taken, the steamship owners might be compelled to take steps to obtain cargo for their own vessels. Closely bound up with shipping are the British railway systems, which allow the merchant shipper to load his products at or near his own warehouse for conveyance to the ship direct. A resumé of the railway and dock facilities afforded by the railway companies in this country would more than fill an entire issue of THE CHEMICAL AGE, but an indication of the accommodation provided by a few of the companies may be of interest.

North Eastern Railway

At Newcastle-on-Tyne, the North Eastern Railway Co. owns the Tyne dock, which has a water area of 50 acres, exclusive of timber ponds, the tidal basin covering 10 acres. The dock, which has two entrances, is situated near the mouth of the river. It is equipped with 41 steam and hydraulic cranes with varying lifting capacities up to 30 tons, and is provided with 15 large warehouses and sheds for the storage of cargoes. Other docks at Newcastle-on-Tyne are the "Albert Edward" and the "Northumberland."

The company's dock property at Hull has a frontage of about seven miles to the River Humber, and has a water area of 247 acres, with 587 acres of quays and land space. There are 11 wet docks the property of the N.E. Railway Co., as well as two riverside quays and a deep-water oil jetty for the discharge of bulk oil to land storage tanks. Storage is provided, *inter alia*, for upwards of 35,000 tons of chemical manures, and 100,000 tons of general goods. The King George dock includes in its equipment electric conveyor belts with a capacity of 800 tons per hour each. Other docks either owned or used by the North Eastern Co. are Sunderland (217 acres), the Hartlepools (150 acres), and Middlesbrough (26 acres).

Great Central Railway

Situated on the Humber, midway between Grimsby and Hull, Immingham is undoubtedly destined to become one of the largest shipping centres in the United Kingdom. Directly connected with the Great Central Railway Company's lines, the Immingham dock has an area of 1,000 acres, with a maximum depth of water of 48 feet. The length of the dock

property is $2\frac{1}{2}$ miles, with a river frontage of $1\frac{1}{2}$ miles, the dock itself having a water area of 45 acres. The very latest facilities are provided for dealing with a variety of traffics; the mineral quay, at which iron ore vessels are usually berthed, has exceptional facilities for quick discharge, being served by four sets of railway metals, all within the radius of the cranes. There are spacious goods transit sheds, warehouses, and a plentiful supply of cranes with a capacity of from 30 cwt. to 50 tons.

The extensive docks at Grimsby are owned by the Great Central Co., whose enterprise has made it one of the principal ports of the United Kingdom for all classes of merchandise and mineral. On the quays and in the sheds are 55 fixed and portable hydraulic, electric, steam and hand cranes and hoists having a lifting capacity varying from 5 cwt. to 60 tons. The company's wharves are 19,700 feet in length. The transit shed on the east side of the Royal dock is 1,500 ft. long by 48 to 67 ft. wide, and that on the west side (one of the largest in the United Kingdom) 900 ft. by 178 ft., giving a total covered area alongside the quays of 583,000 sq. ft. The docks are provided with a special high-pressure hydraulic system.

Midland Railway

Heysham Harbour possesses the natural advantage of deep water at all states of the tide, and Midland express trains arrive and depart alongside the steamers from and to all parts. The north and south breakwaters are over a mile apart as they leave the land, and gradually converge until, at the mouth of the harbour, they are only 300 ft. apart. The present equipment consists of a large quay, 3,000 ft. in length, with a commodious passenger station alongside, enabling passengers to embark direct from train to ship and *vice versa*. Large goods sheds have been erected, alongside which the steamers berth. There is a depth of 17 ft. in the harbour and 40 ft. outside the entrance at low water ordinary spring tides, with landing facilities at all states of the tide. On the north side of the harbour is a quay for the berthing of coastwise steamers carrying pig iron, iron ore, and other heavy traffic, with ample sidings for storage.

Great Western Railway

The Great Western Railway possesses very complete connexions with all parts of London. Extensive warehouse accommodation is available at Paddington, South Lambeth, and Smithfield, as well as at the Poplar and Victoria and Albert stations—in the heart of the London docks system. In addition to the last-named centres the company has its own docks, with commodious warehouses, at Brentford. Ample accommodation is provided for coal and general shipping

traffic, and direct communication is afforded with all docks, wharves, and other premises situated on the Thames. At the other important coastal towns and ports served by the Great Western Railway excellent dock or other waterside facilities are also available. Liverpool, Birkenhead, Manchester, Bristol, and Gloucester; Newport, Cardiff, Barry, Port Talbot, and Swansea; Plymouth, Falmouth, Weymouth (for the Channel Islands); Southampton and Fishguard are but a few of the busy ports served by the Great Western system. The company has also gone to great expense in order to provide adequate warehouse accommodation for the convenience of traders throughout its area. Excellent facilities are available at Bristol, Cardiff, Birmingham, Liverpool, Plymouth and other important centres, where goods can be warehoused at low rents.

London, Brighton & South Coast Railway

Much important traffic is dealt with by the London, Brighton and South Coast Railway Co. at Newhaven Harbour, from which cargo boats sail to various Continental ports. Littlehampton, another centre served by this company, is a port of considerable importance on the south coast.

The Great Eastern Railway

The Great Eastern Railway Co., which runs a most efficient steamship service between the United Kingdom and Continental ports, has extensive docks and warehousing accommodation, together with ample handling facilities, at its harbours at Harwich and Lowestoft.

Experimental Work on Clays

At the Columbus, Ohio, experimental station, the U.S.A. Bureau of Mines has begun laboratory work to determine the rate of casting and dry strength of a cast body, using the kaolins under investigation together with English china clay, Florida kaolin and others. The electrolyte used is a solution of 1/2 sodium silicate and sodium carbonate.

A method for distilling clay similar to the manner in which coal is distilled has been devised by engineers of the ceramic experiment station. The object of this method is to collect the products of distillation and determine the gases given off.

The porosimeter developed in the studies of the oxidation of ceramic wares during firing, being conducted at the Columbus station, has proved a great aid in the control of the latter part of the burn, more especially for paving blocks where a low porosity is essential. A preliminary survey of the relation between porosity, vitrification, and rattler test has been made.

At the Southern experiment station of the Bureau of Mines, Tuscaloosa, Ala., in the study of heat treatment of fillers, work has been performed on raw clays ground in a pebble mill showing 95 per cent. and 90 per cent. through 300 mesh. Raw clays that settled clear after standing 24 hours in 0.1 per cent. starch solution, after heat treatment settled clear up to 500° C., 300° C., and 750° C., but remained cloudy at about 500° C., 400° C., and 1,000° C.

Contracts Open

Tenders are invited for the following articles. The latest dates for receiving tenders are, when available, given in parentheses:

NOTTINGHAM (June 9).—Electrically driven centrifugal pumps, etc. Particulars from Preece, Cardew and Rider, 8, Queen Anne Gate, London.

LIVERPOOL (June 6).—Soaps, boiler fluid, etc. Particulars from and tenders to E. J. Neachell, 31, James Street, Liverpool.

NORTHFLEET (May 30).—Tar (10,000 gals.). Particulars from and tenders to J. A. Mitchell, District Surveyor, Northfleet.

BOURNVILLE.—Powdered glue. Particulars from and tenders to Cadbury & Fry, Ltd. (Joint Buying Department), Bournville.

Physiological Effects of Nitrogen Oxides

The object of an investigation to be undertaken by the Bureau of Mines at Pittsburgh, is to determine the probable effect of nitrogen oxides occurring in explosive fumes, and to outline first-aid emergency and curative treatment of persons so exposed.

Catalogues Received

TANKS AND DRUMS, LTD.—An excellently printed catalogue issued by this firm, whose works are at Bowling Iron Works, Bradford, deals with tanks and drums of all types. In it is shown a complete range of the many types of tanks, cylinders and drums manufactured at their works. A corrugated drum with 5 in. lever lid is specially recommended for the packing of dyes, powders, etc., for export. The corrugations make the drum much stronger, and consequently lighter drums can be used. The catalogue contains a view of the company's works and illustrations of several of the workshops.

A. GALLINKAMP & CO., LTD.—This firm, whose address is 19 and 21, Sun Street, Finsbury Square, London, has just issued a new pamphlet of apparatus for determining the viscosity and flash point of oils which gives a description and directions for use of the Sir Boverton Redwood standard viscometer. This instrument consists of a silvered-brass oil cylinder, furnished with an agate jet, and surrounded by a copper bath. A copper tube, closed at the lower end, projecting at an angle of 45° from the side of the bath near the bottom, provides a means of heating the bath liquid. By the use of a revolving agitator, which forms part of the apparatus, the heated liquid rising from the copper tube can be uniformly distributed through the bath. The agitator carries a thermometer to indicate the temperature of the bath, and the oil cylinder is furnished with a stopper, consisting of a small brass sphere attached to a wire, the sphere resting in a hemispherical cavity in the agate jet. A short standard attached to the oil cylinder carries a clip to support a thermometer in the oil. Inside the oil cylinder, and a short distance from the top, is fixed a small bracket, terminating in an upturned point, which forms a gauge of the height of the oil level. The instrument is supported on a tripod stand provided with levelling screws. Other viscometers shown include Engler's standard pattern, which was approved by the Petroleum Congress, the Saybolt, the Stormer and the Michell. The range of flash-point apparatus includes the Abel, Abel-Pensky, Pensky-Martin and Gray types.

RONALD TRIST & CO., LTD.—High pressure sand and shot blasting equipments are dealt with in Booklet S. 3, which has just been issued by the company, who specialise in this type of machinery. The booklet consists of a reprint of a paper entitled "Sand-blasting," by Mr. E. L. Samson, read before the London branch of the Institution of British Foundrymen in February last. The paper deals in a very concise manner with every operation and is well illustrated by photographs and diagrams. It may, we understand, be obtained on application to the company's offices at 12, Clipstone Street, Great Portland Street, London.

CREPIN & DOUMIN, LTD.—This company is distributing, from 14 and 15, Cooper's Row, Tower, London, a list of their essential oils, synthetic perfumes, special compositions for soap, pomades and perfumed oils, fruit essences, floral ottos, compound flavours, gelatines, etc. "Vioflor," a special deodorising compound is also referred to.

A Proposed Journal of Scientific Instruments

In co-operation with the National Physical Laboratory the Institute of Physics has issued the preliminary number of a monthly publication entitled the *Journal of Scientific Instruments*, under the acting editorship of Dr. E. H. Rayner, assisted by an advisory committee appointed by the Institute of Physics. The scope of the proposed journal is to describe methods of measurement and the construction and use of instruments used in all branches of scientific and technical work. It is well printed and illustrated, and the first number contains six out of a long list of prospective contributions by a number of distinguished scientific writers.

"The Structure of the Atom"

The first edition of Dr. Stephen Miall's booklet on "The Structure of the Atom," a reprint of a series of articles recently contributed to THE CHEMICAL AGE, is already sold out, and a new edition is in the press. It is probable that other works by Dr. Miall of a more comprehensive character may appear later.

German and French Potash

Viewed from Rival Standpoints

In a report on the German potash industry in 1921 issued by Gebr. Dammann, bankers of Hanover, and reproduced in the *Board of Trade Journal*, it is stated that the crisis which, as far back as the last quarter of 1920, had brought about complete sale stagnation in the industry, continued well into 1921, and the hopes of concluding contracts and of effecting foreign deliveries were nullified. Many large works sustained losses which threatened their very existence. The State Potash Council in May, 1921, sanctioned a 50 to 55 per cent. increase on the inland prices, but this increase was soon balanced by wage increases. In any case the increase was too late, inasmuch as spring orders for the agricultural industry had by then been completed. Moreover, the expectations of the State Ministry of Economics that the industry would obtain some 400 million marks from the more lucrative export trade were not realised. A further price increase of 35 per cent. was granted in the summer, which made it once again possible to cover at least costs of production. This was followed by a 70-80 per cent. increase taking effect as from December 7, rendered necessary by a further depreciation of the mark and an increase of wages which had, as a consequence, an increase in the price of material, particularly coal.

The sale of potassium salt in 1920 amounted to over 900,000 tons of pure potash, valued at about 1.5 milliard marks. During the first six months of 1921 sales showed a very considerable decrease, but during the third quarter trade revived and large orders were received from the German agricultural industry. The sales in November, 1921, amounted to 90,700 tons, as compared with 48,000 tons during the same month of 1920. The total sales for the eleven months ending November 30, 1921, amounted to 794,400 tons. Of this amount 672,500 tons were consumed by home industries and 120,000 tons were exported. The export sales, which during the last few years before the war amounted to 50 per cent. of the total sales, at times receded to 5 per cent. This fact makes it clear how difficult was the struggle of the industry during the past year in view of the insufficient prices obtained for inland sales. Conditions have somewhat improved since October, when an agreement was arrived at with the United States. Connexions have been renewed with other European and overseas countries with the exception of Poland, which is still cut off owing to the export regulations. In particular, states the report, the Netherlands, Scandinavia, United Kingdom, Austria, and Czecho-Slovakia may be mentioned. An effort has also been made to revive business with the South-Eastern European countries, as there would appear to be a very lucrative field in the immense agricultural districts of the East, whose return to world economics is only a question of time.

Alsatian competition, the report states, has made itself very evident, particularly in the United States and in some of the other countries favourably situated in regard to freights. No stone was left unturned to supplant the German salts on the world market. Spanish competition may be excluded altogether for some time to come owing to the insurmountable technical difficulties in regard to the shafts. The United States potash substitute industry, which was inaugurated during the war, is no longer considered to be of importance.

Amalgamation Schemes

Dealing with the numerous amalgamation schemes in the German potash industry, the report states that they are progressing, as by a union of the administrations joint and cheap supply of materials, and union of works, it is possible to extract every advantage arising thereby. The industry is, it is true, on the road to becoming an absolute trust, and although the dangers of this development must be recognised, they recede in view of the legal protection behind the Coercive Law, the object of which is to keep the German potash industry, the national monopoly of which was broken by the war, capable of competition. The Burbach-Krügershall group has shown the greatest activity and energy in the extension of its spheres of interest. It acquired a decisive influence in Wittekind (Justus)-Carlshall Ellers, and finally, by taking over 2,000 mining shares, acquired predominance over the Volkenroda concern, which, in its turn, at the beginning of the year had acquired Wilhelmshall-Oelsburg. The Burbach group

thus enlarged comprises 20 works, with 9 chloride of potassium factories, and has thus become the third largest concern. At the head is the Deutsche Kaliwerke-Konzern, with 30 shafts and 10 factories. The second place is occupied by the Winterhall-Alexandershall concern, with 28 shafts and 10 factories.

In conclusion, it is stated that before the future prospects of the potash market can be judged it is of the utmost importance that the currency problem should be solved. What is necessary is the re-establishment of a currency equilibrium as a basis for the stable progress of reconstruction, and the potash industry will play an important part in this reconstruction.

The Alsatian Potash Industry

(FROM THE ALSACE-LORRAINE CO.)

It has been observed that the German agents—still more so their sympathisers abroad—have sought to create the impression that the organisation and strength of the German mines is such that the French mines in Alsace are unable to enter into serious competition with them on the world's potash markets.

These statements have been based chiefly on the assumption that within Germany there are 200 potash mines, while in Alsace there are only 17. The great number of mines in Germany, however, even if it can be shown that they are all in working order, far from being an advantage to their owners, are really a disadvantage, because the world's consumption of potash salts is not great enough to enable all the German mines to produce to their full capacity. The initial cost of production at the German mines is consequently comparatively high. This position has been so well realised by competent authorities in Germany that every effort has been made by the German Syndicate to reduce the number of mines operating. At the present time various schemes are being adopted to allow of the closing down of German mines where the working costs are exceptionally high. Judging by these facts, the limitation of the number of mines in Alsace would seem to be more an advantage than an inconvenience to the French mine-owners.

By comparing the figures showing the shipment of potash salts of Alsatian origin during the first quarter of 1921 with the figures for the same period this year, it will be seen that the progress made by the French mines is very considerable. The figures are as follows, in metric tons of pure potash:—

	January.	February.	March.	Total.
1921	18,509	16,493	8,988	45,990
1922	26,174	20,532	17,904	64,610

The sales of Alsatian potash during the first quarter of this year were therefore 46 per cent. higher than during the corresponding period for 1921. The German sales for the first quarter of this year showed an increase of 25 per cent. Statistics show that the Alsatian mines have exported 50 per cent. of their total output during 1921, while the German mines have exported 16 per cent. of their extraction. It is also interesting to note that the quantities of potash salts sold by the Alsatian mines during the first three months of this year are greater than the total sold during the first six months of last year.

It is sometimes suggested that the producing capacity of the Alsatian mines is not sufficient to enable them to play any considerable part in the world's markets. This, however, is not borne out by facts. In round figures, the world's total potash requirement can be estimated at 1,030,000 tons of pure potash, and if from this figure the total round tonnage consumed in Germany is subtracted—namely, 750,000 metric tons—the balance of 280,000 metric tons is left as the total amount required to supply the world's demand. It is claimed that Alsace is capable of supplying this amount. The mines and works are, in fact, organised to supply this tonnage in the different grades of potash salts required, both as crude salts and as concentrated potash fertilisers.

At present there are four works equipped with the latest improvements and devices for the production of muriate of potash in large quantities, and before the end of the year it is anticipated that a fifth factory will be in full working order. As to sulphate of potash, the Alsatian mines have at their disposal several well equipped factories for the manufacture of this product.

Glass Bottles Inquiry

THE hearing of the complaint under Part II of the Safeguarding of Industries Act with regard to glass bottles imported from Holland and Germany was continued on Tuesday, May 23, when further evidence was given in support of the complaint.

Mr. Francis Redfern (director of John Lumb & Co., Ltd., glass bottle manufacturers, Joint Hon. Secretary and Vice-Chairman of the National Joint Industrial Council for the Glass Manufacturing Industry, and Secretary of the English and Scottish Glass Bottle Manufacturers' Association) supported the complaint, not only as an individual glass bottle manufacturer, but on behalf of the nine concerns forming the English and Scottish Glass Bottle Manufacturers' Association. During and since the war those nine concerns had expended upwards of half a million pounds in the improvement and equipment of their works, and had largely increased their capacity. All of them were efficient. If the works were all employed to their full capacity they could take on an additional 1,700 workers.

Mr. C. S. Davey (of Davey and Moore, and Vice-Chairman of the London Glass Bottle Manufacturers' Association) said that his Association was glad to co-operate in presenting the complaint. The members of his Association were unable to keep their plant fully employed, but there was sufficient plant to deal with any demand made. With regard to prices, the London manufacturers were unable to compete with the Dutch and Germans.

Mr. R. S. Biram gave supplementary evidence as to the effect of the German exchange.

Mr. Glew (Secretary of the United Glass Bottle Manufacturers, Ltd.) gave information with regard to costs of production.

The Committee then adjourned until Tuesday, May 30.

Position of Colour Users

Presiding on Wednesday at the annual meeting of the British Cotton and Wool Dyers' Association Mr. A. Hoegger said that at the present time the position of colour users could not be considered unsatisfactory, as they could draw from various sources, such as (1) British made dyes, (2) Reparation and Treaty dyes, (3) colours obtained under licence, (4) Colour Users' Association's stock, and (5) stocks held by dealers and agents. Quite a number of British-made dyes had been introduced during the past year which were not previously made in this country, and many others had been improved. With regard to reparation and treaty colours, the Board of Trade based its requisitions largely on the recommendation of the Colour Users' Association. Requisitions were submitted quarterly, and the types and quantities were determined chiefly by lists of requirements furnished by members of that Association, supplemented by a careful scrutiny of the licences which had been granted during the preceding quarter.

New German Nitrate Plant

THE *Berliner Tageszeitung* reports that a new nitrogen company has been formed at Munich named "Cosag" (Continentale Stickstoffwerke Aktiengesellschaft). The capital is fixed at 40,950,000 marks. The company will erect its first nitrogen works at Golling, near Salzburg, and has acquired the right to exploit valuable lime deposits situated only a few hundred meters from the site of the new works. Rights have also been acquired in connexion with the use of current from electrical works now in course of construction.

Manchester Chemists' Exhibition

ALREADY more than one-third of the total space available at the City Hall, Manchester, for the forthcoming Chemists' Exhibition, has been booked although the opening day is November 20 next. It is to be primarily an exhibition of manufacturers (or their agents) of any commodity that is of interest to wholesale or retail chemists and to the general public. Space will also be available for machinery exhibits of interest to chemical manufacturers. A specially organised publicity campaign before and during the exhibition and competitions for the trade and public have been arranged by the organisers, Provincial Exhibitions, Ltd., City Hall, Manchester, to whom all communications relating to the Exhibition should be sent.

British Chemical Trade Association

IN their latest Bulletin on the Safeguarding of Industries Act, the British Chemical Trade Association state that the Government have been forced to the conclusion that the Act in its present form is an absolute failure and are inclined to either repeal or drastically amend it, but there are powerful interests working for its retention as it stands. They are of the opinion, however, that some action is contemplated by the Government.

Dealing with "R. Tannin" on page 67 of the Board of Trade list, the Association state they have pointed out to the Board that this item is still in the list, whereas tannic acid has been deleted. They have, the circular continues, promised to rectify this, but that in the meantime this product should be imported as "tannic acid" in order to avoid trouble with the Customs.

The Association state, in conclusion, that all Customs and Excise duties are still being levied on importations into Ireland. The Key Section of the Safeguarding Act is therefore still in force as regards imports into Ireland. The Irish Provisional Government has agreed to the British Customs continuing in office and collecting the taxes, but the money so obtained is handed over to the Irish Provisional Government.

Cellulose Co. and Shareholders

A GENERAL meeting of the holders of the 7½ per cent. cumulative participating preference shares in the British Cellulose and Chemical Manufacturing Co., Ltd., was held at the Cannon Street Hotel, on May 17. Sir Harry McGowan, who presided, moved a resolution confirming the conditional agreement dated April 20, 1922, made between the company and Mr. Arthur Chamberlain on behalf of the holders of preference shares of the company, and this was agreed to. The meeting was followed by an extraordinary general meeting of the members of the company, when confirmation was given to the following resolutions: "That the capital of the company be reduced from £7,750,000 divided into 1,250,000 preference shares of £1 each and 3,500,000 ordinary shares of £1 each, to £6,000,000 divided into 4,250,000 preference shares of £1 each and 3,500,000 ordinary shares of 10s. each, and that such reduction be effected by cancelling paid-up capital which had been lost or which was unrepresented by available assets to the extent of 10s. per share on each of the 2,300,000 ordinary shares which had been issued and were now outstanding, and by reducing the nominal amount of all the ordinary shares in the company's capital from £1 to 10s. per share," and "that the preference shares should not confer the right to any fixed cumulative preferential dividend in respect of the three years ending February 28, 1923, and that the rights and privileges attached to the preference shares should be modified accordingly."

Oxygen Manufacturing Developments

AN arrangement has been arrived at between Synthetic Ammonia and Nitrates, Ltd., and the British Oxygen Co., Ltd. (states *Industrial Gases*) under which the latter company will lease from the former a site near Middlesbrough on which they propose to erect a factory for the production and supply of oxygen. The Oxygen Co. will use the residual oxygen from the nitrogen plant of the synthetic ammonia factory which will adjoin it, but to insure a regular and large supply of both gaseous and liquid oxygen they will also erect separate plant specially designed for that purpose. It is believed that with a supply of liquid oxygen available in the district, an impetus will be given to use that liquid as an explosive in mines. It is anticipated that the new factory will be in operation in four or five months' time.

Fine Chemical Trade Wages

THE Drugs and Fine Chemicals section of the National Union of Distributive and Allied Workers discussed at Liverpool on Saturday, May 20, the question of calling a national strike over a proposed reduction in their wages. No official statement about the meeting was made, but it is understood that the chairman was instructed to convey to the employers a request that negotiations should be opened on wages and hours, the sliding scale being excluded. Failing a resumption of the negotiations the Executive Committee has vested the general secretary with authority to give branches permission to withdraw their labour if they so desire.

Chemical Matters in Parliament

Safeguarding Act Revenue

Mr. Young (House of Commons, May 22) informed Mr. Galbraith that the total amount of duty collected during the month of April under Part I of the Safeguarding of Industries Act was £21,873. Of this amount, £3,625, £341, £10,138, £1,409, £76 and £3,668 were received in respect of goods consigned from France, Belgium, Germany, Netherlands, Japan and the United States of America respectively.

Customs Inspection of Parcels

Mr. Charles White was informed by Mr. Baldwin (House of Commons, May 22) that he was in communication with the Postmaster-General on the subject of charges made by the Post Office for opening parcels for inspection.

Board of Trade Lists

Replying to Mr. Foot (House of Commons, May 22), Mr. Baldwin said the list of scheduled articles in the Safeguarding of Industries Act was prepared by officers of the Board of Trade, who utilised all appropriate sources of information, but it was thought undesirable to consult any interests which might be directly affected by the inclusion or exclusion of any particular commodity. In view of the comparatively very limited number of complaints which had been made, he was satisfied that the list issued was based on adequate technical knowledge.

Drawback

Mr. Young, in reply to Mr. Foot (House of Commons, May 22), said he understood that the regulations as to drawback under the Safeguarding of Industries Act had been available since November 3 last, and copies were forwarded by the Commissioners of Customs and Excise to all bodies or persons who had made inquiry on the subject.

Appointment of Committees

Replying to Dr. Foot (House of Commons, May 22), Mr. Baldwin said he would not suspend the appointment of further committees under the Safeguarding of Industries Act.

Scientific Instruments

In reply to Dr. Murray (House of Commons, May 22), Mr. Baldwin said the Board of Trade considered that a *prima facie* case was made out that the volume of imports from Germany of optical and scientific instruments, considered in relation to the present output of the industry in this country, was such as to exercise a serious effect on employment. Cinematograph films were not included within the Committee's terms of reference.

Synthetic Substances

Mr. Hogge (House of Commons, May 22) asked the President of the Board of Trade whether, in view of the decision of the Referee that synthetic camphor had been improperly included in the list under Part I of the Safeguarding of Industries Act, he would introduce legislation providing for the repayment of the duty to those who had been wrongly called upon to pay it.

Mr. Baldwin said he would not introduce such legislation. Contingencies of the kind which had arisen in this particular case were specifically provided for by section 1 (5) of the Safeguarding of Industries Act.

Mr. Hogge then asked whether the decision given by the Referee under Part I of the Safeguarding of Industries Act with reference to synthetic camphor covered other synthetic substances, including synthetic perfumery used by the manufacturers of fancy soaps; and, if so, whether he would issue immediate instructions to that effect and thus avoid the continued payment by manufacturers of duties improperly levied.

Mr. Baldwin said the decision of the Referee in the case mentioned did not cover other synthetic substances, and consequently the second part of the question did not arise.

Part II Orders

In answer to Captain Wedgwood Benn and Mr. G. Terrell (House of Commons, May 22), Mr. Chamberlain said the President of the Board of Trade was not yet in a position to make a statement as to the Cabinet policy in reference to the imposition of Orders under Part II of the Safeguarding of Industries Act.

Australian Catalogue Duty

Mr. Baldwin informed Major Mackenzie Wood (House of Commons, May 22) that trade catalogues have been dutiable on importation into Australia for a long time past, and the same was true of most other British Dominions and foreign countries. He saw no ground for taking action in the matter. The actual duty levied under the British preferential tariff in Australia was 8d. per lb., or 35 per cent. *ad valorem*, which ever was greater.

Imports of Chemicals

In reply to Mr. Hogge (House of Commons, May 18), Mr. Baldwin gave the following statistics relating to imports into the United Kingdom from October 1 last to March 31:— Cream of tartar, 2,735 cwt., of the declared value of £14,760; tartaric acid, 1,311 cwt., £7,608; citric acid, 122 cwt., £1,618; acetic acid (including acetic anhydride), 1,541 tons, £42,353; vinegar and acetic acid for table use, 86,293 gallons, £14,904; tartaric emetic, 139 cwt., £844; calcium ferrocyanide, 39 cwt., £199; (R) naphthalene, 584 cwt., £332; (R) ammonium phosphate, 83 tons, £4,663; potassium permanganate, 418 cwt., £1,086; and sodium acetate, 1,188 cwt., £1,340.

Customs Refunds

Mr. Kenyon (House of Commons, May 23), asked the Chancellor of the Exchequer whether he was aware of the complaint of a Manchester firm that in order to obtain delivery of certain German goods in April, 1921, they were compelled to deposit £157 in cash, which the Customs officials improperly demanded, and that, despite communications sent on July 19, August 3, August 19, September 1; September 15, October 7, and October 17, 1921, all of which were duly acknowledged by H.M. Board of Customs, they did not succeed in obtaining the refund until February 1, 1922; and whether in view of the hardship involved in withholding this large sum of money for so long a period and in order to avoid further similar occurrences, he was prepared either to increase the staff dealing with such matters or to adopt some simplified system.

Mr. Young said that on receipt of detailed particulars of the case he would have inquiry made. He pointed out that in cases of this nature, the importer had the option of entering into bond instead of making a cash deposit, in order to secure delivery of the goods.

[Gretna Factory]

Replying to Major M. Murray (House of Commons, May 23), Mr. Young said no sales had been arranged to take place at Gretna this month excepting a four days sale of factory consumable stores, which were never included in the Government offer of Gretna, in one lot. This factory had been advertised for sale as a whole since the middle of September last, and he did not propose to give instructions which would hamper the Disposal Board in the realisation of the property to the best advantage, but the Disposal Board would be prepared to give consideration to any offer to purchase the whole property as already advertised, if made at once. They could not, however, wait indefinitely for offers which might never be forthcoming.

Factories Report

In answer to Lord H. Cavendish-Bentinck (House of Commons, May 23) Mr. Shortt said he much regretted to state that the Chief Inspector of Factories, Mr. Graves, died suddenly last Sunday and his death might somewhat delay his Report. He had, however, brought it near completion, and the further revision still required would be carried out as speedily as possible. He wished to take this opportunity of paying a public tribute to the distinguished services rendered by Mr. Graves during a long official career in many capacities.

Spanish Customs Tariff

Mr. Baldwin (House of Commons, May 23) informed Mr. A. T. Davies that in view of the high duties imposed by the Spanish tariff, negotiations had been commenced with the Spanish Government for the conclusion of a commercial treaty, by virtue of which, if the proposals of H.M. Government were adopted, certain of these duties would be modified. He hoped that the negotiations would have a successful issue, but he did not think there would be any advantage at this stage in stating what action H.M. Government might find it necessary to take in the contrary event.

From Week to Week

SIR RICHARD GREGORY has been appointed president of the Decimal Association.

MR. L. A. STRIDE, of the Industrial and General Trust, Ltd., has been elected to a seat on the board of directors of the Rosario Nitrate Co., Ltd.

SEVERAL CASUALTIES were sustained in an explosion on Wednesday at an explosives factory at Schlebusch, near Cologne.

Recent experimental and technical developments in LOW TEMPERATURE CARBONISATION are reviewed in a report just issued by the Fuel Research Board.

THE FERTILISER WORKS of Packard & James Fison (Thetford), Ltd., Bramford, have sustained considerable damage by fire.

The sittings of the Railway Rates Advisory Committee will be resumed at an early date, when the classification of DANGEROUS GOODS will come up for revision.

MR. D. O. EVANS, of the Mond Nickel Co., Ltd., has accepted an invitation to stand as the Coalition Liberal candidate for East Northants at the next general election.

The death occurred, on May 18, in his 87th year, of MR. GEORGE ROBERTSON HISLOP, F.C.S., of Edgehill, Paisley, late gas engineer and manager of Paisley.

Reporting on the BROKEN HILL MINES, the New South Wales Government geologist says there are 20,000,000 tons of ore still to be mined.

Mr. Fielding, the Canadian Minister of Finance, in his Budget speech at Ottawa on Tuesday, announced an INCREASE IN PREFERENCE to British imports.

The New Plant Breeding Station and Chemical Laboratories established in connexion with the Agricultural Department of the UNIVERSITY COLLEGE OF WALES, Aberystwyth, were formally opened on May 20 by Sir Arthur Griffith Boscawen.

It is notified that as from June 1 the registered office of the BRITISH DYESTUFFS CORPORATION, LTD., will be removed from Imperial House, Kingsway, London, to 70, Spring Gardens, Manchester.

The death occurred on May 15 of MR. WILLIAM RICH, of 45, Portland Place, London, for many years administrator of the Rio Tinto copper mines in Spain and recently managing director of the Namaqua Copper Co., Cape Colony.

NOBEL INDUSTRIES, LTD., point out in regard to a recent statement in the daily Press, that they are in no way associated with the Dynamit-Actien-Gesellschaft, vorm. Alfred Nobel and Co., of Hamburg.

Mr. Henry Ford's chief engineer is reported to have announced that a SECRET PROCESS for the cheaper manufacture of fertilisers had been discovered, and that it was proposed to use this process if Mr. Ford obtained the loan of the U.S. Government's nitrate plant at Muscle Shoals.

MR. ALBERT GILLIGAN, D.Sc., F.G.S., lecturer in economic geology and reader in petrology at the University of Leeds, has been appointed to the chair of geology in the university upon the retirement at the end of the present session of Professor Percy F. Kendall.

Among the newly-elected members of the British Chamber of Commerce, Paris (Incorporated), are JOHN MONCRIEFF, LTD., of PERTH, gauge glass manufacturers, and H. D. POCHIN & Co., LTD, of Manchester, manufacturers of chemicals and china clay.

Arrangements have been practically completed by the ELECTROLYTIC ZINC COMPANY, of Tasmania, for the manufacture of phosphatic manure, to supply the Australian market. It is understood that the production will be in the neighbourhood of 10,000 tons a year. Phosphates are to be brought from Pacific islands.

The first meeting of the Committee for the hearing of evidence relating to the complaint with regard to the SALE OF MANTLES for incandescent lighting manufactured in Germany, which it was proposed to hold on Wednesday, May 31, has been postponed until 10 a.m. on Thursday, June 8, at 5, Old Palace Yard, Westminster, London.

At the half-yearly council meeting of the NATIONAL UNION OF SCIENTIFIC WORKERS, progress in the negotiations with the British Association of Chemists was reported and a scheme outlined which, it was hoped, might be made the basis of an immediate temporary arrangement for joint working, to tide

over the period until complete amalgamation could take place.

At a meeting of the Scottish branch of the Ceramic Society, held in Glasgow on May 17, it was decided to have periodical meetings for the discussion of practical papers in connexion with the manufacture and use of refractory materials. It was also decided to hold a meeting in October for the discussion of the lecture given recently by Sir Arthur Duckham on "Heating of Kilns and Furnaces."

At a meeting of the SOCIETY OF GLASS TECHNOLOGY held at University College, Gower Street, London, on May 17, the following papers were read and discussed: "Columnar Structure in Sandstone Blocks," by J. Currie; "Some Practical Notes on the Manufacture of White Glass in a Tank Furnace," by G. W. Adams; and "The Composition of Lime suitable for Various Purposes in Glass Making," by Miss V. Dimbleby and Professor W. E. S. Turner.

Lord Montagu of Beaulieu presided at the annual dinner of the British Science Guild on Tuesday at the Prince's Restaurant, London. Sir Arthur Mayo-Robson entered a plea for PLAIN LANGUAGE IN SCIENTIFIC MATTERS. He felt sure that a wider and deeper interest would be manifest among the general public as to scientific work if discoveries could be put into plain words. Without technical knowledge it was at present impossible to read with interest reports of great discoveries.

It is announced that the METALLIC CHEMICAL WORKS, Barry Port, Carmarthenshire, until recently in the occupation of Metallic Chemicals, Ltd., and used for the manufacture of oxides and other products from zinc, lead, copper, iron, barytes, &c., will be sold by order of the High Court at the Hotel Metropole, Swansea, on June 28, at 3.30 p.m. Particulars are obtainable from Mr. J. H. Roberts, 61, Wind Street, Swansea.

The next meeting of the LONDON SECTION of the Society of Chemical Industry will be held in the rooms of the Institution of Mechanical Engineers, Storey's Gate, London, on Monday, May 29, at 8 p.m., when Sir George Beilby, F.R.S., will read a paper on "The Structure of Coke: Its Origin and Development." The members of the Section will dine together before the meeting at the Victoria Mansions Restaurant, 24, Victoria Street, London.

A new method of LOCAL ANÆSTHESIA has been demonstrated to English specialists by M. Guebel, ex-Chief of the Clinic of Anæsthesia in France. It consists in applying a STREAM OF OXYGEN varying in temperature from that of the body to a point of refrigeration, and it is claimed that dental operations can be performed quite painlessly, and with no deleterious after effects. The oxygen takes a very short time to operate, and M. Guebel claims that the dentist can do ten times as much work as under existing conditions.

As the result of a conference following an application by the Blaenavon Co., Ltd., for a 17 per cent. WAGES CUT, the 120 coke oven and by-product workmen employed by the firm have agreed to a 10 per cent. reduction, bringing their wages down to 6s. 7d. a shift, instead of 7s. 1½d. The owners conceded a point raised by the men, namely, that the practice voluntarily followed by them in the past of increasing the wages of by-product workmen when miners' wages were increased should become a definite rule.

A letter has been received by the Rubber Shareholders' Association from the Council of the Institution of Rubber Industry approving the resolution passed at the recent meeting of the Shareholders' Association. The resolution, it will be remembered, approved the principle of Governmental action with the object of restoring the PRICE OF RUBBER to at least the approximate average cost of production, and urged "leaders of every section to confer for the purpose of taking steps to bring about, so far as practicable, the stabilisation of price at an economic level."

Trials were given at the Ebbw Vale Steel Works recently, to a NEW PROCESS OF STEEL-MAKING. Hitherto the Bessemer-acid process, which is the one generally followed in this country, was employed, but in order to utilise the iron ore from the company's own mines at Irthlingborough, Northamptonshire, and make the works independent of ore supplies from Spain or other foreign countries, a change over is now to be made to what is known as the basic-Bessemer process. It was intended to carry out the extensive experiments in this new method of steel manufacture some years ago, but the war intervened and they were postponed.

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Abstracts of Complete Specifications

178,475. PEAT, TREATMENT OF. J. Moeller, Bridestowe, Devon, and L. de Fonblanque, Guildford House, Farnham. Application date, October 16, 1920.

The object is to subject raw peat to a mechanical treatment and a drying treatment by which it may be converted within 24 hours into a product containing 12—18 per cent. of water. This is effected by forming the peat into hollow balls which are caused to travel along a supporting surface in opposition to a current of hot gas. The raw material is supplied by a conveyor to a mixer provided with a number of rotating knives, and with a central rod in the outlet so that the peat is delivered in the form of blocks with a central opening. These hollow cylindrical blocks are delivered on to a series of superposed inclined troughs which are hung freely from chains so that they can be subjected to vibration to cause the blocks to move forward. A current of hot air is directed upwards over the trays. The partly dried peat is delivered to another mixer containing a screw conveyor in a cylindrical vessel which is rotated. The peat blocks are thereby formed into hollow balls which are then transferred to another set of superposed inclined drying trays.

178,485. PURIFYING AND SEPARATING LIQUIDS, PROCESS AND APPARATUS FOR. J. Cloughton, 21, Brewerton Road, Oldham, Lancs. Application date, November 15, 1920.

The apparatus is for separating liquids of different specific gravities which may contain suspended solid matter. The mixture is delivered into a compartment in a tank formed by a partition inclined in such a way that the compartment tapers downwards. The mixture is thus given a comparatively high velocity so that the solid matter is projected towards the bottom of the tank and caused to separate. The liquid passes under the partition into another compartment of larger size where the liquids tend to separate by gravity, and the heavier liquid at the bottom forms a washing medium for the lighter liquid. The latter flows over the upper edge of the compartment into a settling chamber for further separation of heavier liquid while a baffle projects downwards into this compartment to separate floating impurities. The separated liquids are then collected in other compartments of the tank. This separating apparatus is independent of any filtering medium.

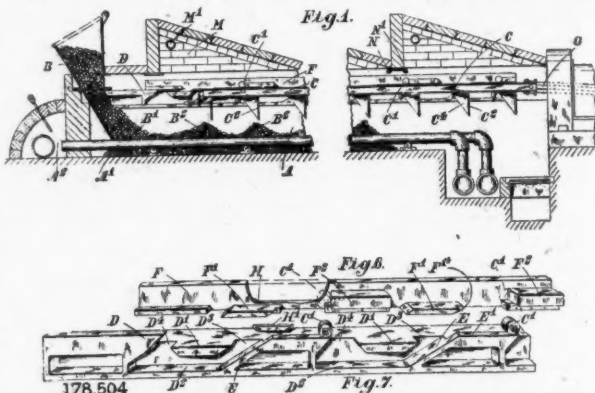
178,498. ALCOHOL FUELS. S. W. Blake, De Rust, District of Oudtshoorn, South Africa. Application date, December 16, 1920.

To obtain a liquid fuel consisting of alcohol containing dissolved acetylene, a mixture of 96 per cent. ethyl alcohol 9 gallons, acetone 1 gallon, and calcium carbide 3—5 lb. is placed in a pressure-resisting vessel and agitated periodically until the liberated acetylene is mainly absorbed. About 1—2 lb. of an insoluble flocculating agent is then added to remove the lime which is allowed to settle and the clear liquid drawn off. By this process 10 volumes of alcohol and acetone may be caused to absorb 125 volumes of acetylene.

178,504. RABBLES FOR LOW TEMPERATURE COAL DISTILLATION PURPOSES OR OTHER PURPOSES WHERE THE LIKE MOVEMENT OF THE MATERIAL IS REQUIRED. E. Baits, 6, South Square, Gray's Inn, London, W.C.1. Application date, December 20, 1920.

A furnace A is provided with heating flues A¹ which discharge into a chamber A² at the rear. Raw material is fed from a hopper B and is distributed and carried over the floor of the furnace by a rabble C. The rabble carries rollers C¹ running on guide members D on either side. The member D is approximately in the form of an H-girder having upper and lower flanges D¹, D², the upper flange having gaps D³, D⁴. A sliding plate F rests on each guide member D and is provided with lateral projections F¹, F² on one side and a flange on the other side. The rabble carries a number of perforated grids C² secured by webs C³, and the rabble is reciprocated by a rod G. When the rollers C¹ are in the position shown resting on the upwardly projecting portions E¹ of the guide,

the rabble is at the limit of its forward movement and at its highest point, so that the grids C² are clear of the material. As the rabble travels back it passes over the portions F¹ which bridge the gaps D³ in the guide. The rollers then come into contact with the stops F² on the sliding plate, so that the

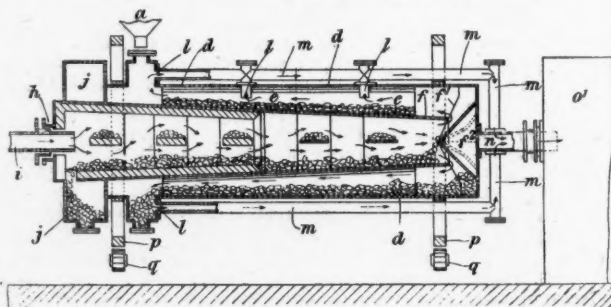


latter is moved backward until the rollers drop through the gaps D⁴ on to the lower flange D². The rabble is now in the position to commence its forward stroke and the material is moved forward until the rollers move up the inclined faces E on to the flat portions E¹, which completes the cycle. The top of the furnace chamber is provided with a series of collecting chambers M, each having an outlet M¹ for gases. In cases in which the nature of the gases changes as the material traverses the furnace the collecting chambers are separated from one another by a curtain of steam produced, by downwardly directed nozzles N, N¹ between two adjacent chambers.

178,510. COAL GAS, PURIFICATION OF. W. G. Adam, 1, Park Row, Knightsbridge, London, S.W.1. Application date, January 4, 1921. Addition to 127,431.

Specification No. 127,431 (see THE CHEMICAL AGE, Vol. I, p. 77), describes a process for treating coal gas with animal or wood charcoal to remove naphthalene and sulphur compounds. It is now found that carbon disulphide, carbon oxysulphide, thiophene, and other organic sulphur compounds may be removed from coal gas by means of amorphous carbon obtained from other sources, preferably anthracite coal. The absorptive power of the carbon may be improved by dehydrating the material by chemical means either before or after carbonisation. If it is not desired to remove ethylene and other hydrocarbons, the quantity of charcoal is limited.

178,537. DISTILLING OR ROASTING PLANT AND APPARATUS MORE PARTICULARLY INTENDED FOR THE MEDIUM AND LOW TEMPERATURE DISTILLATION OF CARBONACEOUS MATERIAL. H. Nielsen, Firs Avenue, Muswell Hill, London, N.10. Application date, January 14, 1921.



178,537

The apparatus is of the kind in which material is subjected to low temperature distillation by direct contact with a

heating medium. The material is delivered from a hopper *a* into a retort *d* provided with runner bands *p* supported on rollers *q*. An inner conical tubular member *f* is supported from the outer shell *d* by means of gusset plates *e* and this inner member is provided with a stuffing box *h* for the inlet pipe *i* conveying the heating medium. Transverse shelves *g* are arranged across the tube *f*. The raw material first passes over the outside of the tube *f* and is then transferred by deflectors *f*¹, *f*² into the smaller end of the conical member *f*. The material then passes through this member against the current of hot gases, and the residue is collected in the chamber *j*. Gas is drawn off through the pipes *l*, *m*, *n* to a chamber *o*¹. The heating medium is preferably producer gas obtained from an adjacent producer at about 600°—700° C., the sensible heat only of the gas being used for the distillation. The gas may thus be used subsequently as fuel. As an alternative, a continuous helix may be provided along the interior surface of the outer shell or on the exterior surface of the inner tube, and also along the interior of the inner tube, to secure a positive feed of the material. In this case the outer and inner members may both be cylindrical. With this apparatus, the heat usually lost by radiation from the hottest zone is intercepted by the outer annular compartment, so that radiation losses are very small. Further, the same length of travel of the material is obtained with a retort of half the overall length which would be necessary with a single heating chamber.

178,560. AUTOCLAVES AND LIKE APPARATUS. E. Brown, 9, Wedmore Street, Holloway, London, N.19. Application date, January 19, 1921.

The object is to provide a cover for an autoclave or other pressure-resisting vessel which is not dependent on securing bolts or studs for its fluid-tightness. The top of the autoclave is provided with a flanged member, having a central opening of slightly elliptical shape, and provided on its under-surface with a seating adapted to engage a corresponding seating on the cover. The elliptical cover may thus be inserted into the autoclave so that it seats against the under surface of the flanged rim and is forced into fluid-tight contact by the pressure within the autoclave. A screwed rod is attached to the centre of the upper side of the cover, and passes through a bridge piece spanning the top of the autoclave, so that the cover may be drawn into position. The seating surfaces may be provided with packing material.

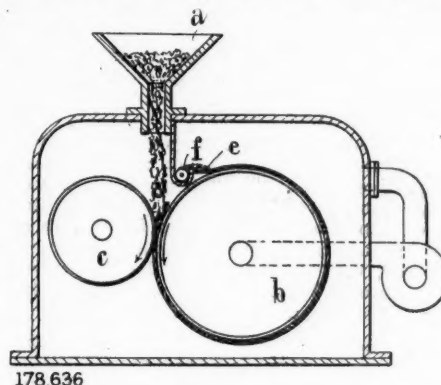
178,587. MAGNETIC SEPARATORS. H. H. Thompson, 137, Gravelly Hill, Birmingham, and A. E. Davies, The Ingle, Ladbroke Park, Tanworth-in-Arden, Warwickshire. Application date, January 27, 1921.

Magnetic separators for treating crushed or pulverised mineral ores are usually formed as rotatable drums on to which the material is fed, while electro magnets are rotated within the drum, and projections are formed on the periphery to provide a number of points at which there is an intense magnetic field. In such apparatus the high intensity field extends only over a very small portion of the periphery of the drum, and the separator is not effective for treating minerals of low magnetic permeability. The separating drum is of non-magnetic metal, and is mounted on a rotating shaft. A disc pole piece is carried within the drum on the shaft and provided with windings on either side. Truncated projections *f* are provided on the outside of the drum over the pole piece, and are shrouded by flanges of non-magnetic metal to prevent lateral movement of the material which is being treated. The curved external armature pieces are of soft iron, and are arranged concentric with the rings and at a short distance from them. The armature pieces are mounted on longitudinal plates which are capable of rotation about the axis of the drum to adjust the position of the armatures. The apparatus is particularly suitable for the treatment of wet material.

178,636. DRYING PROCESSES AND APPARATUS THEREFOR. N. Testrup, 47, Victoria Street, London, S.W.1, and Techno-Chemical Laboratories, Ltd., "Fairlawn," Clarence Road, Clapham Park, London, S.W.4. Application date, February 16th, 1921.

The apparatus is of the kind described in specifications 149,055 and 150,068 (see THE CHEMICAL AGE, Vol. III., pp. 292 and 380) in which drying is effected by spreading the material

on the surface of a revolving drum which is heated internally. The apparatus is particularly suitable for dehydrating peat which contains from 70—90 per cent. of water. The disintegrated material is fed from a hopper *a* to the space between two drums *b*, *c*, mounted on parallel axes and rotated in opposite directions. Provision is made for adjusting the distance between the two drums to produce a layer of any required thickness. The drying drum *b* is of larger diameter than the other, and is heated internally by the evolved vapour after it



has been compressed as described in the previous patents referred to above. The material may be delivered only on to the central portion of the drum to prevent overflowing at the ends. The drum *b* is rotated so that its surface has a velocity about four times that of the drum *c*, and it is found that a uniform and unbroken layer of material is thereby carried by the drum. The dried material is removed by the scraper *e* and delivered to the conveyor *f*.

178,779. ACTIVE CHARCOAL, MANUFACTURE OF. W. Carmichael, London. From Chemische Fabrik auf Actien (vorm E. Schering), 170, 171, Mullerstrasse, Berlin, N.39. Application date, September 8, 1921.

A charcoal of high activity is obtained by reducing lignite, peat, or a coked product thereof, to small pieces which are subjected to a partial vacuum. The material is impregnated with a 5 per cent. solution of potassium carbonate or caustic potash, and then dried and heated to 1,000° C. The material is then washed to remove the alkali, and the charcoal is then dried.

NOTE.—Abstracts of the following specifications which are now accepted appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention:—156,479 (Nitrogen Products Co.), relating to fixing atmospheric nitrogen (see Vol. IV., p. 376); 156,694 (E. Erdmann), relating to lignite tar and shale tar (see Vol. IV., p. 377); 157,828 (American Coke and Chemical Co.), relating to operating by-product condensers (see Vol. IV., p. 456); 174,327 (L'Air Liquide, Soc. Anon. pour l'Etude et l'Exploitation des Procédés G. Claude), relating to manufacturing hydrogen by the partial liquefaction of gas mixtures containing it (see Vol. VI., p. 396).

International Specifications not yet Accepted

177,493. VULCANISING INDIARUBBER. S. M. Cadwell, 200, Ames Avenue, Leonia, N.J., U.S.A. International Convention date, March 25, 1921.

An accelerating agent for use in the vulcanization of india-rubber consists of a substance which contains the radical

$$\begin{array}{c} \text{R}-\text{C}-\text{S}-\text{M} \\ \parallel \\ \text{X} \end{array}$$
 where M represents hydrogen or a salt-forming element or group, or a radical $\begin{array}{c} \text{S}-\text{C}-\text{R} \\ \parallel \\ \text{X} \end{array}$ or $\begin{array}{c} \text{C}-\text{R} \\ \parallel \\ \text{X} \end{array}$ X represents a bivalent element or radical; and R represents an element, which must not be nitrogen unless M represents $\begin{array}{c} \text{C}-\text{R} \\ \parallel \\ \text{X} \end{array}$ When

a compound is used in which M represents a metal, the metal may be zinc or mercury for vulcanising at ordinary tempera-

tures, or zinc, mercury, lead, cadmium, copper, arsenic or manganese may be used at higher temperatures. Aliphatic amines may also be added within certain limits, to accelerate the vulcanization. In one example, a mixture of rubber 100 parts, zinc oxide 10 parts, zinc butyl xanthogenate 4 parts, sulphur 1 part, and toluidine 2 parts is used, while a cement may be produced by the addition of benzol. When an accelerating agent is used in which M is one of the groups mentioned, the time of vulcanization is usually longer, but pre-vulcanization does not take place. Several examples are given.

- 177,494. AMMONIA SYNTHESIS. Soc. Chimique de la Grande-Paroisse (Azote et Produits Chimiques), 13, Rue des Saussaies, Paris. International Convention date, March 25, 1921.

A mixture of nitrogen and hydrogen under hyper pressure is treated for the removal of carbon monoxide and oxygen by passing it over a catalyst at a temperature of 400°-450° C. The catalyst has an iron basis and may be that used for the synthesis of ammonia, either spent or fresh. The apparatus used may be that described in specification 174,041 (see THE CHEMICAL AGE, Vol. VI., p. 353), but the inner tube need not be heat insulated. Water vapour is condensed before the gases are used for the ammonia synthesis.

- 177,496. PHOSPHATES. Rhenania Verein Chemischer Fabriken Akt.-Ges. Zweigniederlassung Mannheim, Wohlgelegen, Mannheim, and F. Rüsberg, 4 Uhlandstrasse, Mannheim, Germany. International Convention date, March 23, 1921. Addition to 174,370.

Specification 174,370 (see THE CHEMICAL AGE, Vol. VI., p. 433) describes a process in which crude phosphate, alkaline sulphate, and a loosening substance are treated with hydrochloric acid gas. In the present invention, the alkaline sulphate is omitted from this treatment and is added subsequently to convert the calcium chloride produced into gypsum. The mixture is prevented from caking by adding an indifferent substance such as sand, gypsum, infusorial earth, or dry brown coal. An example is given in which Florida phosphate, crude lignite and sand are treated with hydrochloric acid gas and then mixed with ammonium sulphate.

- 177,516. ALLOYS. Norske Molybdenprodukter Aktieselskabet, Christiania. International Convention date, March 26, 1921.

Acid-resisting alloys are composed of molybdenum, together with either manganese, silicon, ferro-nickel, or ferro-cobalt, and also iron, nickel, or cobalt. The molybdenum may be added to a steel bath in the form of calcium molybdate. Other constituents may be tungsten, uranium, vanadium, niobium, tantalum, carbon, zirconium, titanium, boron and phosphorus. Specific examples are given.

LATEST NOTIFICATIONS.

- 179,885. Process for producing cellulose from reeds and similar plants. Steinhilber, H. May 13, 1921.
179,919. Apparatus for effecting the removal of chlorides from milk. Puglia, J., and Mennia, C. May 11, 1921.
179,928. Manufacture and production of crucibles for use in fusing and casting refractory minerals, such as silica, alumina, and the like. Roßboul, M. de. May 12, 1921.
179,931. Extraction of oils or fats from oleaginous vegetable matter. Cellulose et Papiers Soc. de Recherches et d'Applications. May 12, 1921.
179,934. Processes for the manufacture of fertilisers. Ercole, A. d'. May 14, 1921.
179,947. Process and apparatus for obtaining argon from atmospheric air. Zack, M. May 11, 1921.
179,951. Process of manufacturing formic aldehyde. Heinemann, A. May 11, 1921.

Specifications Accepted, with Date of Application

- 159,194. Ammonia from peat and the like, Recovery of. P. Brat. February 18, 1920.
159,494. Resinous phenol formaldehyde condensation products, Process for the manufacture of. C. Kulas, and C. Pauling. February 23, 1920.
163,685. Sulphuric acid, Process for distilling. Chemische Fabrik Weissenstein Ges. May 21, 1920.
168,576. Trichlorhydrin, Manufacture of. Glysyn Corporation. August 31, 1920.
171,962. Zinc dust having a high percentage of metallic dust, Process for producing. Rheinisch Nassauische Bergwerke & Hutten Akt.-Ges. and A. Spieker. November 22, 1920.

- 179,201. Metallic ores and residues containing metallic oxides, Purification of. W. H. Dyson and L. Aitchison. October 28, 1920.
179,208. Cellulose acetate, Manufacture of plastic materials or articles having a basis of. H. Dreyfus. November 4, 1920.
179,209. Separators employed for the separation of liquids of different density. W. H. Bateman. November 8, 1920.
179,235. Coke ovens. L. L. Summers. January 5, 1921.
179,287. Separating solids by crystallisation from solvents, Process for. F. W. Berk & Co., and H. V. A. Briscoe. February 1, 1921.
179,309. Thorium nitrate, Manufacture of. H. Wade (Lindsay Light Co.). February 3, 1921.
179,355. Filters. J. F. Crawford, and W. J. Kelly. February 24, 1921.
179,463. Crucible furnaces. F. G. Penny. July 7, 1921.
179,494. Filtering apparatus. E. W. W. Keene. March 11, 1921.

Applications for Patents

- Air Reduction Co., Inc., and Fairweather, H. G. C. Manufacture of alkali cyanides. 13623. May 15.
Andreani, G., and Poma, G. Plant for synthetic manufacture of hydrochloric acid in aqueous solution. 14208. May 19.
Burt, Boulton & Haywood, Ltd., and China, F. J. E. Continuous-pressure filters. 13940. May 17.
Casale, L. Catalysts for synthesis of ammonia, etc. 13835. May 16.
Clayton, W. Alkali silicates. 13972. May 18.
Cocksedge, H. E. Manufacture of water-soluble sodium silicates. 14110. May 19.
Coulbeaux, P. Chemical treatments for refining, etc., metals. 14327. May 20. (Belgium, May 25, 1921.)
Courtaulds, Ltd., and Jones, R. O. Manufacture of caustic soda. 13807. May 16.
Evershed & Vignoles, Ltd. Electric testing instruments. 13918. May 17.
Farbwerke vorm. Meister, Lucius & Brüning, and Imray, O. Y. Manufacture of a complex amino argento mercapto benzene carboxylic acid. 13821. May 16.
Glanzfüden Akt.-Ges. Manufacture of cellulose products from viscose solutions. 14261. May 20. (Germany, October 27, 1921.)
Lidholm, J. H. Producing a solution of cyanamide from calcium cyanamide. 13888. May 17. (Sweden, December 1, 1921.)
Molassine Co., Ltd. Process of detanning leather, etc., and obtaining product for preparation of fertilisers, etc. 14302. May 20.
Oliver, E. L. Filtering apparatus. 13804. May 16.
Soc. Chimiques des Usines du Rhône. Dyeing cellulose acetate. 13946. May 17. (France, July 27, 1921.)
Welter, A. Soap manufacture. 14325. May 20.

Mr. Justice Peterson and Chemical Warfare

In a letter to the *Times* Mr. J. A. Petrie, secretary of the Chemical Warfare Committee of the International Law Association, says: "The death of Mr. Justice Peterson will be regretted by others besides his colleagues on the Bench and the Chancery Bar. The late Judge's genial and humane temperament was common knowledge, but it is perhaps not so generally known that he took a profound interest in other legal matters wholly outside the scope of his judicial duties. As a prominent member of the International Law Association, he devoted considerable time and labour to the discussions, *inter alia*, of the Chemical Warfare Committee of this association, of which he was chairman. As recently as March of this year he drafted an exhaustive report on the question of how the manufacture in peace time of poisonous chemicals for use in war could be restricted and controlled by international regulations with a view to mitigating, if mitigation be indeed possible, some of the horrors of modern warfare. This report, based on the Root resolutions at Washington, will form the subject for a general discussion of the problem of chemical warfare at the conference of the International Law Association to be held at Buenos Ayres in August next.

Reductions in Scottish Railway Rates

The boards of directors of Scottish railway companies have reduced certain rates and charges for the conveyance of merchandise in respect of certain traffic. Experimentally until the end of December the flat rate for coal, &c., for steel and other works, is reduced 1d. per ton; on coal, &c., for shipment the percentage increase is reduced by a fourth and the flat rate is reduced 3d. per ton. The collection or delivery of merchandise conveyed by merchandise trains is reduced from 1s. 6d. to 9d.

Market Report and Current Prices

Our Market Report and Current Prices are exclusive to THE CHEMICAL AGE, and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.

LONDON, MAY 25, 1922.

THE improvement in business continues, and there has been a cheerful feeling in the market. Inquiry has substantially increased, and the tone is very healthy. Price changes have been relatively few, and markets are on the whole steady.

Export demand has also been more encouraging, and some fair orders have been booked.

General Chemicals

ACETONE is in good demand and is scarce on the spot.

ACID ACETIC has been a good market and supplies are relatively scarce for near delivery. Price is unchanged.

ACID FORMIC is only in small request, and the price is maintained.

ACID LACTIC is without feature.

ACID OXALIC is moving steadily into consumption without change in value.

BARIUM CHLORIDE maintains its strong position and is exceedingly scarce for spot.

CREAM OF TARTAR is only a fair market, although the price is maintained.

COPPER SULPHATE is quietly steady, but only a small volume of business is passing.

FORMALDEHYDE is inclined to be weak owing to the absence of any substantial business.

IRON SULPHATE is without change.

LEAD ACETATE remains a bright spot, and the demand is very good.

LEAD NITRATE.—The demand has improved, but the trade still leaves a good deal to be desired.

LITHOPONE is scarce and firm.

POTASSIUM CARBONATE continues a very quiet market.

POTASSIUM CAUSTIC has only a small inquiry, and the price is inclined to sag.

POTASSIUM PERMANGANATE is quietly steady.

POTASSIUM PRUSSIAN is exceedingly firm, and there is very little spot material available.

SODIUM ACETATE continues in active demand and the price is firm.

SODIUM BICHROMATE is only a quiet market and the price is somewhat unsteady.

SODIUM BISULPHITE is without change.

SODIUM NITRITE has been in better request.

SODIUM PHOSPHATE.—There is an improvement in the demand, but the price remains easy.

SODIUM PRUSSIAN is almost unobtainable for near delivery and the price is exceedingly firm.

WHITE LEAD is in steady request without change in value.

ZINC OXIDE continues scarce and the value is maintained.

Coal Tar Intermediates

BUSINESS during the past week has been somewhat better, and certain markets are rather firmer.

ALPHA NAPHTHOL is steady, with small available stocks.

ALPHA NAPHTHYLAMINE is the turn firmer.

ANILINE OIL and SALT are without change.

BENZIDINE BASE is quiet.

BETA NAPHTHOL.—The usual business is being done, and spot lots seem rather short.

DIMETHYLANILINE has been inquired for and price is steady.

DINITROCHLOROBENZOL is very firm, with stock short.

DIPHENYLAMINE is in demand with short stocks, and price is very firm.

"H" ACID.—Some good inquiries have been in the market and stocks of this intermediate are short. Holders are, therefore, not keen to sell, and the price is hard.

METANITRANILINE.—A certain amount of business has been done.

MONOCHLOROBENZOL has been inquired for, and stocks are not excessive.

NAPHTHIONIC ACID is firm in price, and a fair business is passing.

NITROBENZOL.—One or two large inquiries, but little firm business.

PARADICHLOROBENZENE is very firm, with stocks short, and a rise is expected.

PARANITRANILINE.—The price is steady, and a fair business is passing.

PARAPHENYLENEDIAMINE is firm.

"R" ACID has been inquired for, and the price is without change.

Coal Tar Products

THE market generally has a much better tone, and there is some improvement in several coal tar products, although benzol and naphthas remain very weak.

90's BENZOL is slow, and is worth about 2s. per gallon on rails.

PURE BENZOL is in poor demand, and is quoted at 2s. 4d. on rails.

CREOSOTE OIL is in better demand, and is somewhat firmer. It is worth about 4½d. per gallon on rails in the North, and 5d. in the South.

CRESYLIC ACID is also better, the Pale quality, 97/99%, being worth about 2s. 2d. on rails, and the Dark quality, 95/97%, about 2s. on rails.

SOLVENT NAPHTHA is uninteresting, and can be bought at 1s. 8d. on rails.

HEAVY NAPHTHA is also in poor demand, and is not worth more than 1s. 10d. per gallon.

NAPHTHALENE is somewhat better, although no improvement in prices is shown from last week.

PITCH.—Notwithstanding the lateness of the season, the demand for pitch remains good, and prices have an upward tendency. To-day's quotations are, 70s. f.o.b. London, and 67s. 6d. f.o.b. East Coast port.

Sulphate of Ammonia

THE demand for export for the second half of the year has improved somewhat, but business remains difficult, as it is exceedingly difficult to forecast the future.

Now that the prices of nitrate of soda for shipment over the second half of this year have been fixed, it should enable buyers to form an opinion as to the relative value of sulphate of ammonia.

Current Prices

Chemicals

	Per	£	s.	d.	to	£	s.	d.
Acetic anhydride ..	lb.	0	1	8	to	0	1	10
Acetone oil ..	ton	77	10	0	to	80	0	0
Acetone, pure ..	ton	72	0	0	to	73	0	0
Acid, Acetic, glacial, 99-100% ..	ton	59	0	0	to	60	0	0
Acetic, 80% pure ..	ton	43	0	0	to	44	0	0
Arsenic, liquid, 2000 s.g. ..	ton	67	0	0	to	70	0	0
Boric, cryst. ..	ton	60	0	0	to	65	0	0
Carbolic, cryst. 39-40% ..	lb.	0	6	0	to	0	6	4
Citric ..	lb.	0	2	3	to	0	2	3½
Formic, 80% ..	ton	68	0	0	to	70	0	0
Gallic, pure ..	lb.	0	3	3	to	0	3	6
Hydrofluoric ..	lb.	0	0	7½	to	0	0	8½
Lactic, 50 vol. ..	ton	40	0	0	to	43	0	0
Lactic, 60 vol. ..	ton	43	0	0	to	45	0	0
Nitric, 80 Tw. ..	ton	30	0	0	to	31	0	0
Oxalic ..	lb.	0	0	8½	to	0	0	8½
Phosphoric, 1.5 ..	ton	38	0	0	to	40	0	0
Pyrogallic, cryst. ..	lb.	0	6	3	to	0	6	6
Salicylic, Technical ..	lb.	0	0	10½	to	0	1	0
Salicylic, B.P. ..	lb.	0	1	3	to	0	1	5
Sulphuric, 92-93% ..	ton	7	10	0	to	8	0	0
Tannic, commercial ..	lb.	0	2	3	to	0	2	9
Tartaric ..	lb.	0	1	3½	to	0	1	4

	Per	£	s.	d.	£	s.	d.	
Alum, lump	ton	14	0	0	to	15	0	0
Alum, chrome	ton	30	10	0	to	32	0	0
Alumino ferric	ton	9	0	0	to	9	5	0
Aluminium, sulphate, 14-15% ..	ton	12	0	0	to	13	0	0
Aluminium, sulphate, 17-18% ..	ton	13	10	0	to	14	10	0
Ammonia, anhydrous	lb.	0	1	8	to	0	1	10
Ammonia, .880	ton	33	0	0	to	35	0	0
Ammonia, .920	ton	21	0	0	to	23	0	0
Ammonia, carbonate	lb.	0	0	4	to	0	0	4½
Ammonia, chloride	ton	60	0	0	to	65	0	0
Ammonia, muriate (galvanisers) ..	ton	35	0	0	to	37	10	0
Ammonia, nitrate (pure)	ton	35	0	0	to	40	0	0
Ammonia, phosphate	ton	78	0	0	to	80	0	0
Ammonia, sulphocyanide	lb.	0	1	10	to	0	2	0
Amyl acetate	ton	175	0	0	to	185	0	0
Arsenic, white, powdered	ton	42	0	0	to	44	0	0
Barium, carbonate, 92-94%	ton	12	10	0	to	13	0	0
Barium, Chlorate	ton	60	0	0	to	68	0	0
Barium Chloride	ton	19	0	0	to	20	0	0
Nitrate	ton	35	0	0	to	37	0	0
Sulphate, blanc fixe, dry	ton	20	10	0	to	21	0	0
Sulphate, blanc fixe, pulp	ton	10	5	0	to	10	10	0
Sulphocyanide, 95%	lb.	0	1	0	to	0	1	3
Bleaching powder, 35-37%	ton	13	0	0	to	13	10	0
Borax crystals	ton	29	0	0	to	33	0	0
Calcium acetate, Brown	ton	9	0	0	to	9	10	0
" " Grey	ton	13	0	0	to	13	10	0
Calcium Carbide	ton	16	0	0	to	17	0	0
Chloride	ton	6	10	0	to	7	0	0
Carbon bisulphide	ton	50	0	0	to	52	0	0
Casein, technical	ton	50	0	0	to	65	0	0
Cerium oxalate	lb.	0	4	6	to	0	4	9
Chromium acetate	lb.	0	1	1	to	0	1	3
Cobalt acetate	lb.	0	6	0	to	0	6	6
Oxide, black	lb.	0	9	6	to	0	10	0
Copper chloride	lb.	0	1	2	to	0	1	3
Sulphate	ton	28	10	0	to	29	0	0
Cream Tartar, 98-100%	ton	110	0	0	to	112	10	0
Epsom salts (see Magnesium sulphate)								
Formaldehyde, 40% vol.	ton	70	0	0	to	71	0	0
Formusol (Rongalite)	lb.	0	2	6	to	0	2	9
Glauber salts, commercial	ton	5	10	0	to	6	0	0
Glycerine, crude	ton	55	0	0	to	60	0	0
Hydrogen peroxide, 12 vols.	gal.	0	2	5	to	0	2	6
Iron perchloride	ton	30	0	0	to	32	0	0
Iron sulphate (Copperas)	ton	4	0	0	to	4	5	0
Lead acetate, white	ton	42	0	0	to	43	0	0
Carbonate (White Lead)	ton	42	0	0	to	46	0	0
Nitrate	ton	46	10	0	to	48	10	0
Litharge	ton	35	10	0	to	36	0	0
Lithopone, 30%	ton	24	0	0	to	25	0	0
Magnesium chloride	ton	10	0	0	to	10	10	0
Carbonate, light	cwt.	2	10	0	to	2	15	0
Sulphate (Epsom salts commercial)	ton	8	0	0	to	8	10	0
Sulphate (Druggists')	ton	13	10	0	to	14	10	0
Manganese, Borate	ton	65	0	0	to	70	0	0
Sulphate	ton	60	0	0	to	62	0	0
Methyl acetone	ton	60	0	0	to	65	0	0
Alcohol, 1% acetone	ton	65	10	0	to	66	0	0
Nickel sulphate, single salt	ton	49	0	0	to	51	0	0
Ammonium sulphate, double salt	ton	51	0	0	to	52	0	0
Potash, Caustic	ton	33	0	0	to	34	0	0
Potassium bichromate	lb.	0	0	6½	to	—		
Carbonate, 90%	ton	31	0	0	to	33	0	0
Chloride, 80%	ton	12	0	0	to	12	10	0
Chlorate	lb.	0	0	4½	to	0	0	5
Meta bisulphite, 50-52%	ton	84	0	0	to	90	0	0
Nitrate, refined	ton	45	0	0	to	47	0	0
Permanganate	lb.	0	0	9	to	0	0	10
Prussiate, red	lb.	0	4	6	to	0	4	9
Prussiate, yellow	lb.	0	1	2½	to	0	1	3
Sulphate, 90%	ton	13	0	0	to	13	10	0
Sal ammoniac, firsts	cwt.	3	3	0	to	—		
Seconds	cwt.	3	0	0	to	—		
Sodium acetate	ton	23	0	0	to	24	0	0
Arseniate, 45%	ton	45	0	0	to	48	0	0
Bicarbonate	ton	10	10	0	to	11	0	0
Bichromate	lb.	0	0	5½	to	—		
Bisulphite, 60-62%	ton	23	0	0	to	24	0	0
Chlorate	lb.	0	0	3½	to	0	0	4
Caustic, 70%	ton	22	10	0	to	23	0	0
Caustic, 76%	ton	25	0	0	to	25	10	0
Hydrosulphite, powder, 85% ..	lb.	0	1	9	to	0	2	0
Hyposulphite, commercial ..	ton	13	10	0	to	14	0	0

	Per	£	s.	d.		£	s.	d.
Sodium Nitrite, 96-98%	ton	31	0	0	to	32	0	0
Phosphate, crystal	ton	18	10	0	to	19	0	0
Perborate	lb.	0	0	11	to	0	1	0
Prussiate	lb.	0	0	9½	to	0	0	10
Sulphide, crystals	ton	13	0	0	to	14	0	0
Sulphide, solid, 60-62%	ton	21	10	0	to	23	10	0
Sulphite, cryst.	ton	12	10	0	to	13	0	0
Strontium carbonate	ton	55	0	0	to	60	0	0
Strontium Nitrate	ton	55	0	0	to	60	0	0
Strontium Sulphate, white	ton	6	10	0	to	7	10	0
Sulphur chloride	ton	25	0	0	to	27	10	0
Sulphur, Flowers	ton	13	0	0	to	14	0	0
Roll	ton	13	0	0	to	14	0	0
Tartar emetic	lb.	0	1	6	to	0	1	7
Tin perchloride, 33%	lb.	0	1	2	to	0	1	4
Perchloride, solid	lb.	0	1	5	to	0	1	7
Protochloride (tin crystals) ..	lb.	0	1	5	to	0	1	6
Zinc chloride 102° Tw.	ton	21	0	0	to	22	10	0
Chloride, solid, 96-98%	ton	25	0	0	to	30	0	0
Oxide, 99%	ton	36	0	0	to	38	0	0
Dust, 90%	ton	45	0	0	to	47	10	0
Sulphate	ton	18	10	0	to	19	10	0

Coal Tar Intermediates, &c.

	Per	£	s.	d.	£	s.	d.	
Alphanaphthol, crude	lb.	0	2	3	to	0	2	6
Alphanaphthol, refined	lb.	0	3	0	to	0	3	3
Alphanaphthylamine	lb.	0	2	0	to	0	2	1
Aniline oil, drums extra	lb.	0	1	0	to	0	1	1
Aniline salts	lb.	0	1	1	to	0	1	2
Anthracene, 40-50%	unit	0	0	8½	to	0	0	9
Benzaldehyde (free of chlorine) ..	lb.	0	3	9	to	0	4	3
Benzidine, base	lb.	0	5	9	to	0	6	0
Benzidine, sulphate	lb.	0	5	9	to	0	6	0
Benzoic acid	lb.	0	1	7½	to	0	1	9
Benzoate of soda	lb.	0	1	6	to	0	1	7
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol benzoate	lb.	0	4	9	to	0	5	0
Betanaphthol	lb.	0	1	6	to	0	1	9
Betanaphthylamine, technical ..	lb.	0	6	0	to	0	7	0
Croceine Acid, 100% basis	lb.	0	3	6	to	0	3	9
Dichlorobenzol	lb.	0	0	9	to	0	0	10
Diethylaniline	lb.	0	2	9	to	0	3	0
Dinitrobenzol	lb.	0	1	3	to	0	1	4
Dinitrochlorbenzol	lb.	0	0	11	to	0	1	0
Dinitronaphthalene	lb.	0	1	4	to	0	1	5
Dinitrotoluol	lb.	0	1	5	to	0	1	6
Dinitrophenol	lb.	0	2	9	to	0	3	0
Dimethylaniline	lb.	0	2	6	to	0	2	9
Diphenylamine	lb.	0	4	3	to	0	4	6
H-Acid	lb.	0	6	6	to	0	7	0
Metaphenylenediamine	lb.	0	5	6	to	0	5	9
Monochlorobenzol	lb.	0	0	10	to	0	1	0
Metanilic Acid	lb.	0	6	0	to	0	6	6½
Monosulphonic Acid (2.7)	lb.	0	5	6	to	0	6	0
Naphthionic acid, crude	lb.	0	3	0	to	0	3	3
Naphthionate of Soda	lb.	0	3	0	to	0	3	3
Naphthylamin-di-sulphonic-acid ..	lb.	0	4	0	to	0	4	3
Neville Winther Acid	lb.	0	7	9	to	0	8	0
Nitronaphthalene	lb.	0	1	4	to	0	1	5
Nitrotoluol	lb.	0	1	0	to	0	1	2
Orthoamidophenol, base	lb.	0	10	0	to	0	10	5
Orthodichlorobenzol	lb.	0	1	0	to	0	1	1
Orthotoluidine	lb.	0	1	6	to	0	1	9
Orthonitrotoluol	lb.	0	0	10	to	0	1	0
Para-amidophenol, base	lb.	0	10	0	to	0	10	6
Para-amidophenol, hydrochlor ..	lb.	0	10	6	to	0	11	0
Paradichlorobenzol	lb.	0	0	6	to	0	0	7
Paranitraniline	lb.	0	3	6	to	0	3	9
Paranitrophenol	lb.	0	2	3	to	0	2	6
Paranitrotoluol	lb.	0	5	0	to	0	5	3
Paraphenylenediamine, distilled ..	lb.	0	10	6	to	0	10	9

French Potash

THE Alsace-Lorraine Trading Co. report : although the demand for immediate delivery of potash salts has not been very considerable during the present month, negotiations for autumn supplies show that potash is in good request at current prices. According to returns which have been published recently, the extraction of pure potash from the French mines during the first quarter of this year totalled 64,610 tons, as compared with 43,990 tons during the first quarter of 1921, an increase of 46 per cent.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

[GLASGOW, MAY 24, 1922.]

BUSINESS during the past week, while fairly satisfactory, does not show any marked improvement. Home manufacturers' prices are about the same, and values for spot deliveries are well maintained.

Continental quotations are inclined to be lower, presumably due to further depreciation in mark value.

In coal tar intermediates and wood distillation products the tendency is still downward generally.

Industrial Chemicals

ACETONE.—Small demand. Lower prices being quoted for forward delivery.

ACID ACETIC.—Glacial for forward delivery quoted £57 to £58 per ton; spot lots about £60 to £61; 80% technical quality offered at £37 per ton c.i.f.

ACID BORACIC.—Usual local demand, also one or two inquiries for export. Crystal or granulated £60 per ton; powdered £62 per ton, in ton lots.

ACID CITRIC.—Inclined to be dearer. Quoted 2s. 3d. less 5%.
ACID HYDROCHLORIC.—Price unchanged. 6s. 6d. per carboy ex works.

ACID NITRIC, 80° Tw.—Quoted £25 5s. ex works.

ACID OXALIC.—Steady at 8½ per lb. Some spot lots at 8½d.

ACID SULPHURIC.—144° Tw., £4 per ton; 168° Tw., £7 5s. per ton; de-arsenicated £1 per ton more.

ALUMINA SULPHATE.—Fair inquiry mostly for export. 14/15%, £8 5s. per ton; 17/18%, £10 per ton, f.o.b.

ALUM (LUMP POTASH).—In moderate request. £15 5s. to £15 10s. ex store; Continental offers of £12 10s. c.i.f. U.K.

AMMONIA CARBONATE.—Price unchanged. 4d. to 4½d. per lb. A few inquiries for export.

AMMONIA MURIATE.—Makers' price unchanged. £34 per ton f.o.r.

AMMONIA SALAMMONIAC (CRYSTALS).—Quoted £57 to £58 per ton. In little demand.

AMMONIA SULPHATE.—25¼%, £15 10s.; 25¾% neutral, £16 13s. per ton, ex works, May delivery; supplies more plentiful.

ARSENIC, WHITE POWDERED.—Fair demand. Price now £44 per ton ex quay.

BARIUM CARBONATE.—A few inquiries for export. Price about £13 per ton.

BARIUM CHLORIDE.—Offered at £14 10s. per ton ex works.

BARYTES.—Very little demand. Finest white, £5 15s. per ton; grey, £3 15s. per ton, ex works.

BLEACHING POWDER.—English makers' price unchanged. £14 per ton, ex station. Continental offers of £10 c.i.f. U.K.

BORAX.—Crystal or granulated, £29 per ton; powdered, £30 per ton, in ton lots.

CALCIUM CHLORIDE, 70/75%.—Offered at £6 10s. per ton ex quay.

COPPER SULPHATE.—Good inquiry for export. Price £27 to £28 per ton f.o.b.

COPPERAS.—Small local demand. £4 per ton ex works.

GLAUBER SALTS.—Moderate demand. £5 to £5 10s. per ton ex store.

LEAD, RED.—Unchanged, at £36 10s. delivered. White, £50 10s. per ton delivered, for five ton contracts.

MAGNESITE, GROUND CALCINED.—£12 10s. per ton ex store; Coarser quality £10 per ton.

MAGNESIUM CHLORIDE.—In fair demand. Spot lots £7 to £7 10s. ex store; Continental offers of £6 per ton c.i.f. U.K.

NAPHTHALENE.—The market is dull. White crystals are offered at £17 per ton ex works.

NITRE CAKE.—Quoted 20s. per ton ex works.

POTASSIUM BICHROMATE.—Maker's price 6½d. per lb. delivered; cheaper spot lots.

POTASSIUM CARBONATE, 88/92%.—In little demand. £29 per ton ex store.

POTASSIUM CAUSTIC, 88/92%.—Spot lots £33 to £34 per ton ex store.

POTASSIUM CHLORATE.—English make 5d. per lb. delivered; cheaper spot lots on offer.

POTASSIUM NITRATE.—Inclined to be easier at £35 per ton, ex store.

POTASSIUM PERMANGANATE.—In little demand. 10d. to 10½d. per lb. for B.P. quality.

POTASSIUM SULPHATE, 90%.—Price unchanged, at £15 per ton.

SODIUM ACETATE.—Offered at £24 per ton, ex wharf.

SODIUM BICARBONATE.—£11 per ton ex station for refined quality; £10 per ton for mineral water quality.

SODIUM BICHROMATE.—English makers' price unchanged. 5½d. per lb. delivered.

SODIUM CAUSTIC.—76/77%, £25 10s.; 70/72%, £23 10s.; 60%, £26 5s.; 98/99%, powdered, £29 to £30 per ton, ex station; moderate inquiry for 70/72% strength.

SODIUM HYPOSULPHITE.—Commercial quality, £14 10s., ex store; pea crystals, £21 per ton, ex store.

SODIUM NITRATE.—Fair inquiry for export, £14 15s. per ton, f.o.b.; refined quality, 5s. per ton more.

SODIUM PRUSSIAN, YELLOW.—Price, 9½d. to 10d. per lb., ex station.

SODIUM SILICATE, 140°.—In little request. £10 to £11 per ton, ex station.

SODIUM SULPHATE (Saltcake, 95%).—Fair inquiry for export and supplies scarce. £4 per ton, f.o.b.

SULPHUR.—Flowers £14; ground £13; rock £12; roll £13. Prices nominal. Practically no demand.

TIN CRYSTALS.—Quoted 1s. 4d. per lb. In little request.

ZINC, CHLORIDE, SOLID.—Quoted £21 per ton, ex store.

ZINC OXIDE.—A few inquiries. £37 to £38 per ton.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

BENZOL.—The market is easier. Supplies of crude benzol, 65%, are now offered at 1s. 6d. per gallon, carriage paid.

BETA NAPHTHOL.—Few inquiries. Price remains firm at 1s. 3d. to 1s. 4d. per lb.

DIPHENYLAMINE.—In small demand. Price quoted, 4s. 3d. per lb. f.o.b.

FREUND'S ACID.—Small export inquiry. Price quoted, 6s. per lb. on 100% basis, f.o.b.

"H" ACID.—Some inquiries. Price remains firm at 7s. per lb. on 100% basis. Slightly lower prices can be obtained for large quantities.

METANITROANILINE.—Small inquiries. Price quoted, 5s. 5d. per lb. delivered.

METHYL ALCOHOL, CRUDE.—Supplies are offered at £50 per ton, carriage paid.

MONOCHLOROBENZOL.—Inquiry for export. Price quoted, £80 per ton, f.o.b., drums included.

NITRONAPHTHALENE.—Refined offered at 1s. per lb. Specially purified, at 2s. 2d. per lb., delivered.

NITROACETANILIDE.—Small inquiries. Price quoted, 4s. per lb. carriage paid.

PARADICHLOROBENZOL.—Export inquiry. Price quoted, £50 per ton, f.o.b., packages free.

Production of Single Crystals of Aluminium

† THE Production of Single Crystals of Aluminium, and their Mechanical Properties" was the subject of a lecture at the University College, Swansea, last week, by Professor Carpenter, F.R.S. The lecturer dealt with the effect of small variations of strain upon aluminium crystals when subsequently annealed, and it was shown that under suitable conditions the crystals in the normal piece of aluminium would grow to the extent of about three inches by two inches by an eighth of an inch. In other words, a specimen containing originally something of the order of two million crystals would be transformed into a single crystal. By working this way the author was able to examine the mechanical characteristics of these large crystals, and the results obtained showed that all the metals contained in the single crystal were virtually the same as in the specimen containing two million crystals.

German Chemical Trade Notes

FROM OUR OWN CORRESPONDENT.

Berlin, May 22, 1922.

DURING the past week the market on the whole has shown no noticeable change as compared with the previous week. The chemical market is reluctant as regards further buying and there is no further tendency towards stabilisation of prices. Price cutting has been a feature in many products whereas quotations from manufacturers are increasing. The volume of business has been very poor, as the home demand is not urgent, with only some small orders placed for immediate needs.

Export trade is moving along moderate lines, as the fluctuation of the mark handicaps the buying-inclination from abroad. Somewhat increased business was done in copperas for May-June delivery. Acetic acid and glacial were on offer at considerably raised prices from factory; turn-overs were on a satisfactory scale. The shortage of alkalis referred to recently has somewhat declined. The present tendency in paint materials for home use is firmer, with prices inclined to move upward. Export trade for paint materials is quiet.

The market of coal-tar and tar-products is firm both for home and export. Weak hands, fearing price-declines, have been offering their goods freely at lowered quotations, with a resultant reluctance from buyers. As hopes of an improvement in the value of the mark failed, numerous requests for tar and pitch have been received, particularly from abroad. The undertone, however, is based on rising prices. Only tar-oils for heating and impregnating purposes are neglected and are offered in some cases below cost.

The following quotations are in marks per kilogram (d = domestic price; e = export price).

ACIDS: Acetic 80%, 49.50 mk. d.; 58 mk. e.; glacial, 98/100%, scarce at 68/70 mk. e.; tendency firm. Acetyl-Salicylic, 280 mk. d.; 375 mk. e. Benzoic is in strong demand at 160/180 mk. d.; 180/190 mk. e. Boric, 84.25 mk. d. Citric has a firm tendency and prices are 310 mk. d.; 320 mk. e. Formic, 80/85%, 27/28 mk. d. Muriatic, 10/21° Bé, arsenic-free; increased demand is noted from Eastern Europe at 5.50 mk. Oxalic, 98/100%, crystallised, 43 mk. d.; 75 mk. e. Salicylic, 160 mk. d.; 200 mk. e. Sulphuric, 66° Bé, is in strong demand for export at 11 mk. e. Tartaric, crystallised and powdered, in fair request at 160/162.50 mk. d.; 175/180 mk. e.

INDUSTRIAL CHEMICALS: Alum: Chrome, 15%, 32/36 mk. d.; 40/42 mk. e.; Potash, crystal powder, 9 mk. d.; 12.50/13 mk. e.; Potash, in lumps, 10/13 mk. d.; 14.50/16 mk. e. Alumina Sulphate, 14/15%, 6 mk. d.; 8.25 mk. e.; 17/18%, 10.50 mk. e. Ammonia Carbonate, powdered, 18.25 mk. d.; 30/32 mk. e.; in lumps, scarce at 30 mk. d.; 45 mk. e. Ammoniac Sal, crystallised, 98/100%, scarce at 30/32 mk. d.; 38/39 mk. e. Amyl Acetate, technical, 200 mk. d. Antimony, crude, advanced to 18 mk. d.; regulus, 23/25 mk. d. Barium Chloride, 23.50 mk. d.; 25.50 mk. e. Bleaching Powder, 7.25 mk. d.; 13.75 mk. e. Borax, crystallised, 40/41.75 mk. d.; powdered, 42 mk. d. Calcium Chloride, 70/75%, 5.35 mk. d.; 6.50 mk. e. Copperas, 5.50 mk. d.; 6.50 mk. e. Copper Sulphate, 98/100%, crystallised, 36 mk. d.; 38 mk. e. Epsom Salt, 2.95/3 mk. d.; in fair request for export at 4.75/5 mk. e. Formaldehyde, 30%, 50 mk. d.; 68 mk. e.; 40%, 75 mk. d.; 80 mk. e. Glauber's Salt, technical crystallised, 3 mk. d.; 3.75 mk. e. Glycerine, 28° Bé, pure, in strong demand at 95/105 mk. d.; 105/120 mk. e. Magnesium Chloride, fused, in barrels, 2.75 mk. d.; increased purchasing from abroad is noted at 6.50 mk. Potassium Bichromate, advanced to 66 mk. d.; 84/85 mk. e. Potassium Carbonate, 96/98%, 27.50 mk. d.; in strong demand for export at 40 mk. d.; 80/85%, 26 mk. d. Potassium Caustic, 88/92%, 28 mk. d.; 38 mk. e.; liquor, 50°, 13.50 mk. d.; 21.50/22 mk. e. Potassium Chlorate, 32 mk. d.; in fair request from abroad at 37/39 mk. Potassium Metabisulphite, in good demand for export at 60 mk. Potassium permanganate, 70/75 mk. d.; 75/85 mk. e. Potassium, Prussiate, red, is very scarce at 400 mk. d.; yellow, 180 mk. d. Potash Saltpetre stands at 29 mk. d. Salt Cake, loose, 5 mk. d.; 6.35 mk. e. Soda, crystallised, 7 mk. d.; 10 mk. e. Soda Ash, unchanged at 14 mk. d. Sodium Benzoate, in good demand with higher prices at 170 mk. d. Sodium Bicarbonate, P.H. G. 5 quality is freely offered at 8.50 mk. d.; 18 mk. e. Sodium Bichromate, 68 mk. e. Soda, caustic, 125/128°, 31 mk. d.; liquor, 38/40°, 11 mk. d. Sodium Hyposulphite, crystallised, 12.50/13.75 mk. d.; 16 mk. e.; peas are freely offered at 16.50 mk. d.; 18 mk. e. Sodium Oxalate, 25 mk. d. Sodium Salicylate, only occasional demand at 170 mk. d. Sodium Silicate, 38/40° Bé, 6 mk. e. Sodium Sulphide, 30/32%, 11.50/12 mk. d.; 15 mk. e.; 60/62%, 23/24 mk. d.; 25 mk. e. Zinc Chloride, 22 mk. d.; 25 mk. e. Bone Glue, transparent, unchanged at 62 mk. d. Dextrine, light-yellow, in fair demand at 36 mk. d.; supplies are scarce. Lead, red, 38/41 mk. d.; 41/44.50 mk. e.; Lead, white powdered, in good

request at 40/43 mk. d.; 42/46.50 mk. e.; in oil, 45 mk. d.; 47 mk. e. Litharge, in strong demand at 43 mk. d.; 45.50 mk. e. Lithopone, red-seal, 30%, 19/20.50 mk. d.; 27 mk. e. Skin Glue, At quality, 78 mk. d. Strong Glue, unchanged at 62 mk. d. Zinc White--increased purchasing was noted at 34 mk. d.; 36 mk. e. for green-seal goods; red-seal, 38 mk. d.; 50 mk. e. Naphthalene, pure, in good demand from abroad; balls are offered at 18 mk. d.; 21 mk. e.; flakes, 18 mk. d.; 20 mk. e. Pitch met with raised prices at 6.60 mk. d. net, which high quotation, however, seems to be rather unjustified.

Nitrate Prices 1922-23.: New Method of Quotation

AIKMAN (LONDON), LTD., state that a cable from Valparaiso reports that at the last meeting of the Nitrate Producers' Association the directorate unanimously fixed prices from July, 1922, to June, 1923, delivery at the equivalent of about 8s. 6d. for July, rising to 9s. 6d. for December, 9s. 1d. May, and 8s. 6d. per quintal for June, 1923, delivery. It was decided, however, to sell in future on the basis of "per metric quintal of 100 kilos," instead of "per quintal of 46 kilos," and the actual prices fixed are thus as follows:—

July 1, 1922, delivery, 18s. 6d. per metric quintal, equal to 8s. 6.12d. per quintal; July 15, 18s. 9d. and 8s. 7.50d.; August 1, 19s. and 8s. 8.88d.; August 15, 19s. 3d. and 8s. 10.26d.; September 1, 19s. 6d. and 8s. 11.64d.; September 15, 19s. 9d. and 9s. 1.02d.; October 1, 20s. and 9s. 2.40d.; October 15, 20s. 2d. and 9s. 3.32d.; November 1, 20s. 4d. and 9s. 4.24d.; November 15, 20s. 6d. and 9s. 5.16d.; December 1, 1922, to April 30, 1923, 20s. 8d. and 9s. 6.08d.; May, 1923, 19s. 9d. and 9s. 1.02d.; June, 1923, 18s. 6d. and 8s. 6.12d.

The above prices are all for ordinary quality, and it is assumed that the premium for refined will be maintained at the equivalent of 4d. per quintal as in the past, or about 8½d. per metric quintal.

Prices for May-June, 1922, delivery remain unchanged at 10s. 9d. per quintal May and 10s. 3d. per quintal June.

The Use of Chloride of Lime

At the Manchester Coroner's Court, on May 18, Mr. C. W. W. Surridge held an inquest on Mr. William Ball, aged 55, who died in hospital on May 14. Mr. Ball was in the employment of the Cleansing Department of the Manchester Corporation, and about four months ago it was noticed that he had gone a yellowish colour. Later sores appeared on his face and he had been unable to work since the end of April. Questioned as to the disinfectant employed, an inspector of the department said it was chloride of lime in solution. A post-mortem examination had been carried out by Dr. Buck, who stated that death was due to kidney disease, accelerated by blood poisoning. He was, however, unable to say how the latter had been caused. Replying to the coroner, Dr. Buck said that the chloride of lime could not have caused it, nor had he heard of it having any effect on the kidneys. An open verdict was returned.

The Carriage of Acids

On Wednesday in the Court of Appeal, Lords Justices Bankes, Scrutton, and Atkin had before them an appeal by the Great Northern Railway Co. against a decision in favour of L.E.P. Transport and Depository Co., given by Mr. Justice Horridge in the King's Bench Division. The railway company brought an action against the defendants, forwarding agents, for breach of warranty in connexion with the carriage over the railway from Tilbury to Luton of oxygen water in glass carboys. The railway company's case was that this water was a concentrated solution of hydrogen peroxide and that it was measured by the volume of gas it gave off and was usually in strength of 10, 12, or 20 volumes, but there was a foreign form of it which by adding sulphuric acid brought the concentrated solution up to 180 volumes. Mr. Justice Horridge held that the solution would cause damage, and that the goods were dangerous and that there was a breach of warranty. He, however, gave judgment for defendants, as the railway company had not shown that they were liable to make the payment they sought to recover from the defendants. The Court now allowed the appeal of the railway company with costs, and dismissed a cross appeal, holding that the railway company were the professed common carriers in respect of the value of goods, and were employed by the owners as such.

Varnish Manufacturer's Failure

At the Birmingham Bankruptcy Court, on May 10, the public examination took place of John Gardner Lewis, varnish manufacturer, of 31, Florence Road, Acock's Green. The gross liabilities amounted to £286 17s. 8d., of which £250 6s. 6d. was expected to rank for dividend, the deficiency being £245 2s. 1d. The debtor said the causes of his failure were want of capital and bad trade. He was formerly a traveller for a firm of varnish manufacturers. He gave up his position in September, 1920, and started as a varnish factor with a capital of £30. Owing to depression in trade he had not made sufficient profit to meet his living expenses. He continued trading, although he knew he was insolvent in August last. One of his creditors sued him, and obtained a judgment against him for £84, which resulted in the bankruptcy proceedings.

The examination was closed, subject to the signing of notes

Failure of a Manufacturing Chemist

The first meeting of the creditors of Mr. George Steven, trading as G. Steven and Co., 118, Chorlton Road, Old Trafford, Manchester, manufacturing chemist, was held on May 17, at the Official Receiver's offices, Byrom Street, Manchester. The statement of affairs showed liabilities of £5,524 18s. 1d., of which £3,341 12s. 1d. was due to unsecured creditors, while there was a partly secured creditor for £2,523 6s., the security held being valued at £340, leaving £2,183 6s. to rank as unsecured. The assets were estimated to realise £4,469 0s. 4d., from which £1,506 5s. had to be deducted for preferential claims, leaving net assets of £2,962 15s. 4d., or a deficiency of £2,562 2s. 9d. The debtor attributed his failure to shortness of capital and the slump in trade. It appeared that he commenced business as a manufacturing chemist in March, 1918, without any capital of his own. The business was successful until August, 1919, but soon afterwards the slump in trade set in, and he was seriously handicapped by lack of capital. In August, 1921, he obtained £1,491 with a view to a partnership or the formation of a limited liability company, but this did not mature and apparently the amount had been forfeited. The debtor became aware of his position early last month. The creditors decided to appoint Mr. Arthur T. Eaves and Mr. Archibald Yearsley, both of Manchester, as joint trustees, assisted by a committee of five of the creditors. The creditors include:—W. J. Bush and Co., Ltd., London, £45; J. Crossfield and Sons, Ltd., Warrington, £30; Howard and Sons, Ltd., Ilford, £60; May and Baker, Ltd., London, £65; H. H. Smith, Ltd., London, £55; Sterns, Ltd., London, £50; R. Tomlinson, Manchester, £20; Executors of J. F. Wilkinson, Pendleton, £150; W. Wilkinson, Manchester, £25; R. Ward, Manchester, £15; W. Siddons, Manchester, £15; Isaac Booth and Son, Manchester, £10; John Bentley, Manchester, £10; Colin Campbell and Co., Ltd., London, £10; Leslie Gates, Hailsham, £10; B. Laporte, Ltd., Luton, £10; and Textile and Chemical Products Co., Ltd., Manchester, £10.

A Consulting Chemist's Failure

In the bankruptcy of Mr. John Thomas Norman, consulting chemist, 23, Leadenhall Street, London, the Official Receiver has now issued to the creditors a summary of the debtor's statement of affairs, which discloses liabilities £8,850 of which £1,313 are returned as expected to rank for dividend, and estimated net assets £229. In his observations the Official Receiver reports that the receiving order was made on January 18 on the petition of a creditor, the act of bankruptcy being the failure of the debtor to comply before June 21 with the requirements of a statutory bankruptcy notice. He was adjudged bankrupt on January 21. The Official Receiver remains trustee of the estate, no resolution having been passed at the first meeting of creditors. It appears from the debtor's statements that for the past 30 years he has carried on business as a consulting chemist at 23, Leadenhall Street, London. The business was fairly successful until the outbreak of the war, but then declined, and his earnings had since been insufficient to meet his household and personal expenditure. The debtor attributes his insolvency to the war and consequent effect on his particular business of research chemist. According to his deficiency account, he had on January 18, 1919, a surplus of £100. He has since received gifts from relations

and friends £550, fees £1,200, and tuition fees £300, and he accounts for these sums and for the creation of his present deficiency of £1,083 as follows:—Depreciation of laboratory apparatus and equipment, £400; household and personal expenses, £2,107; loss in respect of money paid as guarantor for other persons, £180; liability for debts for which no consideration was received, £66; depreciation of shares, £100; law costs, £240; and liability for payment of annuity to another person, £140. The debtor says that he has kept no books of account since 1914. Of the unsecured liabilities £372 represents rent and storage charges, £140 liability for annuity to another person, £86 law costs, while the balance is in respect of work done and goods supplied. The creditors treated as fully secured are stated to hold against (a) £500 cash advanced 1,000 shares in a company known as Forest Carbonate Ltd., now in liquidation, and against (b) £214 a second charge on a policy of assurance on the debtor's life. The contingent or other liability (£2,375 treated by the debtor as not expected to rank against his estate) is in respect of a claim for alleged breach of agreement in connection with the acquisition of leases in the district of the Forest of Dean. The debtor adds that he sold his household furniture in November 1919 for £300.

At a sitting of the London Bankruptcy Court on May 19 Mr. Registrar Francke ordered the public examination of the debtor, who was questioned by the Official Receiver with regard to his business and dealings, to be concluded.

Earthenware Chemical Tanks

In the Shoreditch County Court, on Tuesday, before Judge Cluer, C. E. Thomas and Co., of 362, Mare Street, Hackney, ink manufacturers, sued John Pickup and Son, of Spring Garden Mills, Plumbe Street, Burnley, Lancs, dealers in earthenware, waste iron and scrap, to recover £35 15s. 2d., under peculiar circumstances. Mr. A. E. Robinson appeared on behalf of the plaintiffs. Mr. Thomas, the plaintiff, gave evidence, and said that he wanted some earthenware tanks for his son, who manufactured special dyes for inks. These were very difficult to manufacture, and it was necessary for the utensils to be clean. The defendants had about 800 of these earthenware tanks, with a 36-gallon capacity, some of which had been used in a chemical factory for sulphur and picric acid. He had a couple of them, and found that the chemicals had so eaten into the earthenware that it contaminated the liquid for making the ink. He would not have minded that if the defendants could have told him of anything he could have used to counteract the action of the chemicals, but they did not. He wrote and told them he would have 60 of them if they could guarantee them sound and unused, and at the same time mentioned that the two he had were useless because of the chemicals. They replied that they would pick him out 60 of the best for £20. They actually sent forward 80, and of these only 58 were tendered by the railway company, many of them broken, most of them cracked, and all of them used, with the chemicals oozing through the cracks. The chemicals easily oozed through, as the tanks were made of soft fireclay, lined with porcelain. Naturally he had refused to accept them, but what was more astounding was that the railway company wanted to charge him for the carriage on 80. He refused, and paid *pro rata* for 60. The defendant said the plaintiff had been told he could not guarantee the earthenware tanks and that some of them were used.

Judge Cluer said there was clearly no answer to the case, and found for the plaintiff for the amount claimed. Judgment was entered accordingly, with costs.

Research on Detonators

Under the direction of Mr. S. P. Howell, explosives engineer, an investigation will be made by the Bureau of Mines at the Pittsburgh experiment station with the object of devising suitable tests for determining the strength and detonating efficiency of various grades of detonators containing different compositions of various sizes corresponding to those offered for sale in the United States for use with industrial explosives, and determination of other factors that determine the detonating efficiency and strength of detonators.

Company News

TARAPACA AND TOCOPILLA NITRATE Co.—The report for 1921 shows a gross profit of £57,376, and a net profit of £38,464, which, with £62,309 brought in, makes £100,773. Payment of a dividend of 10 per cent., less tax, leaves £86,773 to be carried forward. The annual meeting will be held at Winchester House, London, on May 30, at 2.30 p.m.

JURGENS, LTD.—The net profit for the year 1921 was £186,110, and £17,074 was brought forward. The dividend on the preference shares absorbs £175,000 and £28,184 is carried forward. The net profit for 1920 was £377,467.

NITRATE PRODUCERS' STEAMSHIP Co.—The accounts to April 30 last show a profit of £108,074. After deducting the usual charges there remains a disposable balance of £95,044. A further dividend at the rate of 10 per cent. per annum for the final six months of the year, plus a bonus of 5 per cent., free of tax, is declared and £50,000 is placed to reserve, leaving £29,414 to be carried forward. The annual meeting will be held at 20, Billiter Buildings, London, on May 30, at 11.30 a.m.

BABCOCK & WILCOX.—The net profit for 1921 was £490,181, and £99,827 was brought in, making £590,008. After paying the preference dividend, less tax, the directors recommend a further dividend of 9 per cent. on the ordinary shares, free of tax, making 16 per cent. for the year; £150,000 goes to reserve and £10,000 to the staff pension fund; £71,243 is carried forward.

OAKBANK OIL Co.—The credit balance, including £23,780 brought in, is £73,371. A dividend at the rate of 10 per cent. per annum is payable on the ordinary shares, £20,000 is written off depreciation, and £30,371 is carried forward.

PUMPHRESTON OIL Co.—The accounts show a credit balance, including £39,437 brought in, of £97,796. Carrying forward £40,246, a dividend at the rate of 10 per cent. per annum is payable on the ordinary shares, and £20,000 is written off depreciation.

BRUNNER, MOND & Co., LTD.—The directors announce an ordinary dividend for the half year ended March 31 at the rate of 11 per cent. per annum, making 8 per cent. for the year, less tax; £50,000 is placed to suspense account; £250,000 for depreciation of stocks, £93,000 being carried forward; the sum of £130,000 is written off cost of issue of the new preference shares out of investment surplus reserve account. The dividend is the same as the previous year, when £50,000 was placed to suspense and £141,000 was carried forward, while £165,000 for depreciation and £264,000 written off stocks were charged against profits.

NATIONAL DRUG AND CHEMICAL COMPANY OF CANADA.—The report to January 31 last states that after paying all trade expenses, etc., and paying preference dividends, a balance of £20,061 remains.

BROKEN HILL PROPRIETARY, BLOCK 10.—A cabled advice from Melbourne states that the net loss for the half-year to March 31 last, after providing for depreciation, was £4,627. There is a credit balance to profit and loss of £36,529, and the assets show a surplus of £12,912; this does not include shares in other companies. Copies of the reports and accounts should be in the hands of shareholders on the London register by the end of June.

BROKEN HILL PROPRIETARY, BLOCK 14.—Operations for the half year to March 31 last resulted in a net loss, after providing for depreciation, of £3,932. The credit balance to profit and loss carried forward is £18,263, and the assets show a surplus of £16,495, exclusive of shares in other companies.

ALIANZA NITRATE Co.—The accounts for 1921 show a gross profit of £78,142. After deducting all charges the net profit is £2,929, which, with £691,402 brought in, makes a total of £694,331. After deducting the interim dividend of 15 per cent. paid in November last there remains £619,331, out of which the local board recommends the payment of a further dividend of 25 per cent., making 40 per cent. for the year, and leaving £494,331 to be carried forward. The annual meeting will be held at 136, Calle Prat, Valparaiso, Chile, on June 6, at 3 p.m.

ANTOFAGASTA NITRATE Co.—In accordance with the terms of the trust deed securing the 5½ per cent. 10-year registered debentures, certain of the debentures have been drawn for redemption on June 1, at the offices of the Law Debenture Corporation, Ltd., 24, Old Broad Street, London.

CASSEL CYANIDE Co.—An interim dividend of 3d. per share, less tax at 5s. 6d. per £, is payable on June 2 to holders on the register on May 12.

WOLFRAM MINING AND SMELTING Co.—The report to September 30 last states that during the year the demand for wolfram on behalf of home and foreign manufacturers, with the exception of German, was insignificant, and the price fell away steadily until a price far below anything touched at any time prior to the war was reached. The accounts show a loss of £13,076, after allowing for depreciation. The annual meeting was held at Winchester House, London, on Friday.

SPICER BROTHERS, LTD.—The proposals for the amalgamation of this company and James Spicer & Sons were unanimously approved at meetings of the companies on Tuesday.

BRITISH OIL & CAKE MILLS.—The report for 1921 states that progress has recently been made in determining the company's position in regard to liability for E.P.D. and other taxation. No definite figure has yet been arrived at, but ample reserves are provided in the accounts now presented for this liability, and upon a final settlement it is anticipated that these will prove more than sufficient. After making adjustment for estimated liability in respect of the above and the reserve for contingencies, providing £10,000 for staff pension fund, and placing of £25,000 to reserve account, there is a profit of £293,583. To this sum is added £22,706 brought forward, making available £316,289. The preference dividend for the year required £40,871, and the dividend of 10 per cent. on the ordinary shares £250,000. The balance of £25,418 remaining is carried forward. In 1920 the profits were £414,464, and the dividend on the ordinary shares was 15 per cent.

SANTA CATALINA NITRATE Co.—An interim dividend of 5 per cent. (1s. per share), less tax, is payable on June 19.

ESPERANZA COPPER & SULPHUR Co.—The report for 1921 states that the output of pyrites was 59,431 tons, 11,745 tons less than in the previous year. The profit was £556, which with £4,297 brought forward, makes £4,853, which the directors propose to carry forward. The annual meeting will be held at 62, London Wall, London, on May 31, at noon.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

LOCALITY OR FIRM OR AGENT.	MATERIAL.	REF. No.
Canada	Proprietary drugs	—
Spain	Lubricating oils	—
Mexico	Talc, soapstone, palm oil, chemicals	—

Tariff Changes

BRITISH INDIA.—An amendment of the official tariff valuations of mineral oil is now in force.

BRITISH HONDURAS.—A revised Customs Tariff, effective as from April 1, provides for revised schedules of import duties. Copies of the tariff may be consulted at the Tariff Section of the Department of Overseas Trade, 35, Old Queen Street, London.

NIGERIA.—The existing *ad valorem* import duties are now raised from 12½ to 15 per cent.

ST. LUCIA.—Revised forms of certificate origin of and value and invoice have been adopted. The new forms are identical with those recommended for adoption by the Imperial Customs Conference, 1921, and contained in Appendix A of the Report of the Conference.

UNION OF SOUTH AFRICA.—Regulations relating to the method of labelling pest remedies may be inspected at the Tariff Section of the Department of Overseas Trade.

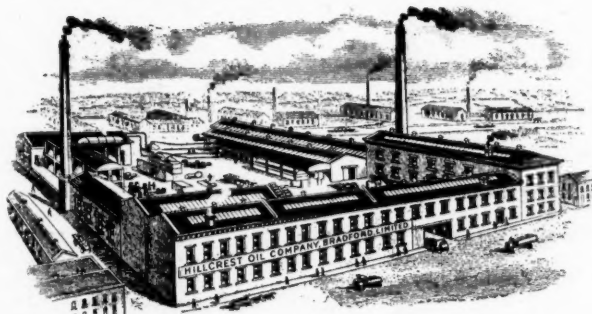
GERMANY.—Soaps, perfumery, glass and glassware are, *inter alia*, affected by a schedule of increased import duties, the text of which was published in the Board of Trade Journal of May 18 (page 550).

HILLCREST OIL CO. (BFD.) LTD

Manufacturers of

Oleic Acid

Soap Oils



Stearic Acid

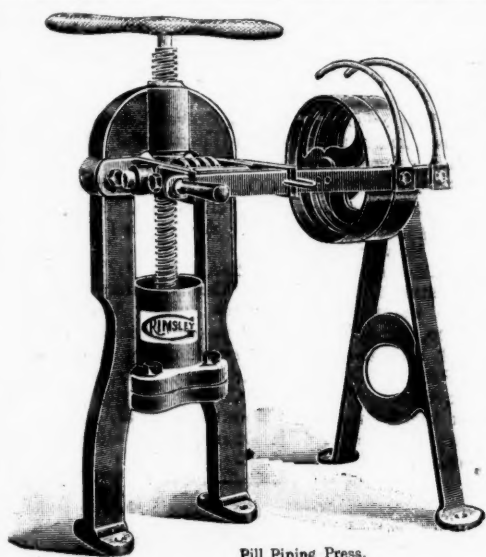
Soap Fats

HILLCREST OIL CO. (BFD.) LTD

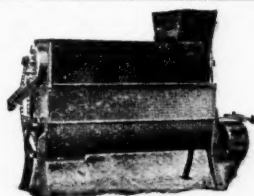
CLAYTON - - - MANCHESTER

CHEMICAL PLANT FOR PILL MANUFACTURE

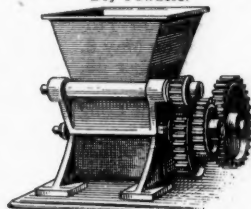
MIXING, SIFTING,
FILTERING, ETC



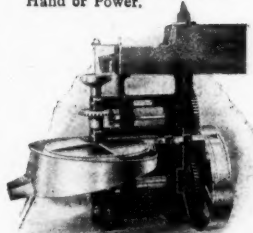
Pill Piping Press.



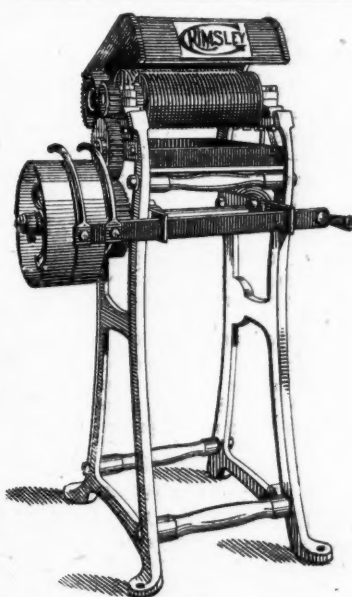
Sifting and Mixing Machine for
Dry Powders.



Pill Mass Mixing Machine for
Hand or Power.



Pill Rounding Machine.



Rotary Pill Cutting Machine.



& CO.,
(Leicester)
LTD.

St. George's Engineering Works,
Queen Street, LEICESTER

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

BRITISH PEROLIN CO., LTD., R/O, 44 George Street, Baker Street, London, merchants, £34 12s. 11d. March 24.
DEBONNAIRES PHARMACY, 150, Wood Street, Walthamstow, chemists, £13 15s. 2d. March 17.
LLEWELLYN, Willie, 135, Dunraven Street, Tonypandy, chemist, £11 18s. 6d. March 23.
MACDIARMID AND CO., 82, Mark Lane, London, chemical merchants, £29 5s. 2d. January 5.
STEVENS, Mrs. R., 19, Liverpool Road, Stoke-on-Trent, chemist, £17 2s. 8d. March 31.
THOMAS, F., 9, Union Street South, Halifax, wholesale druggist, £10 17s. 6d. March 27.
WOOLDRIDGE, L. C., 4, Bramshill Street, Harlesden, chemist, £20 14s. 10d. March 23.

Bill of Sale

CHAPMAN, William Henry, 28, Mill Hill Road, Acton, dyer and cleaner. May 19. £40.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary is also given—marked with an *—followed by the date of the Summary but such total may have been reduced.]

CAWTHORN (JAMES) LTD., Gateshead, chemists.—Registered May 9, mortgage to bank. *Nil. June 6, 1921.
WALKER HARDMAN LTD., Radcliffe, manufacturing chemists.—Registered May 8, charge to bank. *Nil. August 30, 1920.
WILLIAMS (ROBERT) & SONS (GORTON) LTD., dyers, etc.—Registered May 8, £20,000 mortgage, to H. J. Dafforn and another, Spring Gardens, Manchester. *Nil. April 29, 1921.

Receiverships

BRITISH OIL CRUSHERS, LTD. S. G. Clarke, of 110, Cannon Street, London, was appointed receiver on May 8, under powers contained in debentures dated October 28, 1920.
S.D.Q. MANUFACTURING CO., LTD. S. Blythen, of Long Eaton, was appointed receiver and manager on May 9, 1922, under powers contained in mortgage debenture dated July 8, 1921, in place of J. P. Newton, of Long Eaton, appointed April 7.

London Gazette

Companies Winding up Voluntarily

BRITISH SMELTING AND REFINING CO., LTD. F. O. Wilson, 36, Spring Gardens, Manchester, appointed liquidator. Meeting of creditors at the offices of the liquidator, Monday, May 29, at 3 p.m. Particulars of claims to the liquidator by June 20.
BY-PRODUCT RECOVERIES, LTD. T. Bishop, St. George's House, 193, Regent Street, London, appointed liquidator.
HORTON MANUFACTURING CO., LTD. R. F. W. Fincham, 3, Warwick Court, Gray's Inn, London, appointed liquidator. Meeting of creditors at the offices of the liquidator, May 26, at 2.30 p.m.

Bankruptcy Information

SKEAT, Charles, 609, High Road, Tottenham, Middlesex, chemist and druggist. First meeting, May 29, 11.30 a.m., 29, Russell Square, London, W.C.1. Public examination, June 14, 11 a.m., Court House, Upper Edmonton.
THE VELIKOID MANUFACTURING CO., Daw Bank Works, Stockport. Receiving order, May 18. Creditor's petition.

Liquidator's Notice

MONTGOMERY (W.) & CO., LTD. (in voluntary liquidation). Particulars of claims to L. G. Oldfield, 11, Old Jewry Chambers, London, E.C.2, the liquidator, by June 21.

Partnership Dissolved

OAKLEY, Horace, and WRIGHT, William Duncan, chemists, 2, Grove Lane, Smethwick, and 8, Lichfield Street, Wolverhampton, under the style of OAKLEY & WRIGHT by mutual consent as from March 31, 1922, so far as concerns W. D. Wright, who retires from the firm. Debts received and paid by H. Oakley, who will continue the business.

New Companies Registered

AGDEN SALT WORKS, LTD., 41, Castle Street, Liverpool. Manufacturers of salt, brine, and other chemical products, etc. Nominal capital, £30,000 in £1 shares.
AMALGAMATED CHEMICAL CO., LTD. 39, Victoria Street, London. Manufacturing and analytical chemists, soap manufacturers, etc. Nominal capital, £3,500 in 2,500 ordinary shares of £1 each and 10,000 non-cumulative preference shares of 2s. each.
CHEMICAL AND ENGINEERING PRODUCTS, LTD., 5, Victoria Street, London. Engineers, coal carbonisers and distillers, patent fuel manufacturers, etc. Nominal capital £100 in £1 shares.
FLEET FERTILISERS, LTD., Fleet, Hants. Manufacturers of and dealers in artificial manures, fertilisers, insecticides, fungicides, etc. Nominal capital, £1,000 in £1 shares.
LUBRICATION SPECIALISTS, LTD., 57, Moonfield, Liverpool. Fat and chemical manufacturers, lubricating oil and grease importers, exporters and manufacturers, etc. Nominal capital, £3,000 in £1 shares.
THAMES VALLEY RUBBER CO., LTD. Manufacturers of and dealers in bottle stoppers, rubber and gutta percha, etc. Nominal capital, £6,000 in £1 shares. A subscriber: G. W. Smith, 216, London Road, Twickenham.
G. AND J. THOMSON, LTD., 28, Colvend Street, Bridgeton, Glasgow, manufacturing and analytical chemists, etc. Nominal capital, £2,000 in £1 shares.
UNIVERSAL CHEMICAL CO., LTD. Manufacturers, exporters and importers of chemicals, etc. Nominal capital, £5,000 in £1 shares. A director: O. Sichel, 52, Bunhill Row, London.
VEGETABLE OILS AND MARGARINE, LTD., 1-2, Great Winchester Street, London. Manufacturers of and dealers in soap, margarine, tallow, oils, etc. Nominal capital, £150,000, in 140,000 participating preference shares of £1 each and 200,000 ordinary shares of 1s. each.
WEST AFRICAN DRUG CO., LTD., African House, 6, Water Street, Liverpool. Chemists, druggists, oil and colour merchants, &c. Nominal capital, £25,000 in £1 shares. A director: J. Overton, 40, Hanover Street, Liverpool.

Recent Wills

Mr. Hugh Davenport Ledward, Beechcroft, Ollerton, near Knutsford, of Burgess, Ledward and Co., Ltd. £73,061
Mr. James Frederick Maximilian Philippe Hartmann, Adleshop House, Chipping Norton, Chairman of F. Steiner and Co., Ltd. £146,485
Mr. Arthur Wilson Ball, 37, Tufnell Park Road, London, joint managing director of Oppenheimer and Son and Co., Ltd., manufacturing chemists, Queen Victoria Street, London £2,139

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